BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 C Edition : 21.08.92

Replaces : 02.91 Test oil : ISO-4113

Combination no. : 0 403 476 098

Injection pump

Pump designation : PES6MW100/720RS1130

EP type number : 0 413 406 122

Governor

Governor design. : RSV350...1075Mw0A318

-7

Governer no. : 0 420 085 158

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 111.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1060

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 1060

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Setting point:

Speed rpm: 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.20

Speed rpm: 1100...1110
2nd rack travel in: 4.00
Speed rpm: 1180...1210
4th rack travel in: 1300
Speed rpm: 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring

Setting point w/out bumper Speed rpm : 350 Rack travel in mm : 7.5

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

Speed

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve — 1st version

1st speed rpm : 1060

Rack travel in m: 11.20...11.30

2nd speed rpm : 600

Rack travel in m: 11.80...11.90

3rd speed rpm : 900

Rack travel in m: 11.40...11.60

rpm : 450...510

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 600 Del.quantity cm3/ : 61.5...64.5 1000 s: (59.0...67.0) Spread cm3 : 5.00 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE

Remarks:

A02

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,1 B 5 : 21.08.92 Edition Replaces : 09.91 Test oil : ISO-4113 Combination no. : 0 403 476 109 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor Governor design. : RSV350...1300MWOA329 -10 Governer no. : 0 420 085 178 Customer spec. information Customer : MB-NFZ Engine : OM 366 LA 1st version kW : 155.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening . pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 3.60...3.70 : (3.55...3.75) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1280 Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1280Aneroid pressure h: 1000 Del.quantity : 98.0...100.0 1000 : (96.0...102.0) : 3.50 Spread cm3 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 105...113 Setting point: rpm Rack travel in mm : 0.6 Testing: 1st rack travel in: 11.0

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Speed rpm : 1330...1335 *

2nd rack travel in: 4.00

Speed rpm : 1410...1423

4th rack travel in: 1550

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 5.80...6.00

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : -

Rack travel mm : 10.10...10.20

Measurement

Speed $1/\min : 500$

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 550

Rack travel in m: 12.40...12.70

3rd pressure hPa : 1000

Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed

Speed rpm : 600 Del.quantity cm3/: 85.0...88.0 1000 s: (82.5...90.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 35.0...37.0

1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.0

Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 80...88 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.60...3.70 Prestroke mm : (3.55...3.75) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : MB6,1B11 : 21.08.92 Edition Replaces : 12.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 110 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm: 1280 EP type number : 0 413 406 165 Governor Rack travel in mm : 14.40...14.50 : RSV350...1300MW0A329 Governor design. Del.quantity cm3/: 11.4...11.6 Governer no. : 0 420 085 181 100 s: (11.2...11.8) Customer-spec. information Customer : MB-NFZ Spread cm3 : 0.3Engine : 0M366LA 100 s: (0.6) rpm : 350.0 1st version kW : 170.0 2nd speed Rated speed : 2600 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.0...1.4 TEST BENCH REQUIREMENTS 100 s: (0.7...1.6) cm3 : 0.3 Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 419 992 198 Degree: -3 Speed rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP : 0 681 343 009 assembly 1st version Opening Speed rpm : 1280 pressure, bar : 172...175 Aneroid pressure h: 1000 Del.quantity : 774.0....18.0) Test lines : 1 680 750 089 cm3 : 3.50 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 8.00x2.50x600 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 91...99 Set equal delivery quant. per values Setting point: Speed rpm BEGINNING OF DELIVERY Rack travel in mm: 0.6 Test pressure, bar: 30...32

Testina:

1st rack travel in: 13.4

Speed rpm : 1330...1335 *

2nd rack travel in: 4.00

Speed rpm : 1410...1423 4th rack travel in: 1550

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 75...83

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.2

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 hPa : -Pressure

Rack travel mm : 10.70...10.80

Measurement

1/min: 500 Speed

1st pressure hPa : 350

Rack travel in m: 11.90...12.10

2nd pressure hPa : 500

Rack travel in m: 13.10...13.30

3rd pressure hPa : 1000

Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 750

Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0)

cm3 : 5.00Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 41.0...43.0

1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.4

rpm : 1330...1335 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.10...6.30

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50

1000 s: (5.50)

Remarks:

Spread

Test hydr. locking device for starting with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 80...88 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : LIE Edition : 03.12.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 112 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation: PES6MW100/720RS1225rpm : 10001st speed EP type number : 0 413 406 220 Governor Rack travel in mm : 13.20...13.30 Governor design. : RSV400...1000MW1A338 Del.quantity cm3/: 14.4...14.6 Governer no. : 0 420 085 184 100 s: (14.2...14.8) Customer-spec, information Customer : LIEBHERR Spread cm3 : 0.3Engine : D 916 TI 100 s: (0.6) 1st version kW : 173.0 rpm : 400.0 2nd speed Rated speed : 2000 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 2.0...2.4 TEST BENCH REQUIREMENTS 100 s: (1.8...2.7) Spread cm3 : 0.3Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 417 413 049 Degree: -3 rpm : 800 Speed Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder Governor spring pre-tension : 0 681 343 009 assembly Click setting x : 5.00Openina FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 172...175 1st version Speed rpm : 1000Test lines : 1 680 750 008 Aneroid pressure h: 1000 Del.quantity : 144.0...146.0 Outside diameter 1000 : (142.0...148.0) x Wall thickness : 3.50 Spread cm3 : 6.00x2.00x600 x Length mm 1000 : (6.00)(A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 96...104 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Setting point: Speed rpm : 800

Rack travel in mm: 0.6

Testing: 1st rack travel in: 12.20 rpm : 1020...1030 Speed Spread 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 3rd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1200 rpm : 0.30...1.70Speed Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring morn. : 400 **BREAKAWAY** Rack travel in mm : 5.7 1st version Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm Speed Rack travel in mm : 5.60...5.80 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.20...13.30 rpm : 500 2nd speed Rack travel in m: 13.20...13.30 d speed rpm : 700 3rd speed Rack travel in m: 13.20...13.30 LOW IDLE 5th speed rpm : 400 Rack travel in m: 14.40...14.70 Speed Aneroid/Altitude Compensator Test Spread 1st version Setting Remarks: Speed : 550 **LIDU** Pressure hPa : -Rack travel mm : 11.10...11.30 Measurement 1/min: 550 Speed 1st pressure hPa : 330 Rack travel in m: 11.60...11.70 2nd pressure hPa : 510 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.20...13.30 FUEL DELIVERY CHARACTERISTICS 1st version

Speed : 500 rpm Del.quantity cm3/: 142.0...145.0 1000 s: (139.5...147.5) cm3 : 5.001000 s: (7.0) Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/: 145.0...148.0 1000 s: (142.5...150.5) Aneroid pressure h: rpm : 550 Del. quantity cm3/: 104.0...106.0 1000 s: (102.0...108.0)

1mm rack travel less than

full load rack tr: 12.20 rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 127.0...137.0 1**00**0 s: (124.0...140.0) Rack travel in mm : 19.50...21.00

rpm : 400 Rack travel in mm : 6.10...6.30 Del.quantity cm3/ : 20.5...24.5 1000 s: (18.0...27.0) cm3 : 3.50

1000 s: (5.00)

80A

Aneroid pressure h: 1000

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : LIE Edition : 03.12.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 112A Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1225-1st speed rpm: 1000 EP type number : 0 413 406 220 Governor Rack travel in mm : 13.20...13.30 : RSV400...1000Mw1A338 Governor design. Del.quantity cm3/: 14.4...14.6 Governer no. : 0 420 085 184 100 s: (14.2...14.8) Customer-spec. information Customer : LIEBHERR Spread cm3 : 0.3Engine : D 916 TI 100 s: (0.6) 1st version kW : 173.0 2nd speed rpm : 400.0 Rated speed : 2000 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 2.0...2.4 TEST BENCH REQUIREMENTS 100 s: (1.8...2.7) cm3 : 0.3Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 417 413 049 Degree: -3 rpm : 800 Speed Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder Governor spring pre-tension assembly : 0 681 343 009 Click setting x : 5.00Opening FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 172...175 1st version Speed rpm : 1000 Test lines : 1 680 750 008 Aneroid pressure h: 1000 Del.quantity : 144.0...146.0 Outside diameter 1000 : (142.0...148.0) x Wall thickness : 3.50 Spread cm3 : 6.00x2.00x600 1000 : (6.00) x Length mm (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. 1st version per values Control lever position degrees: 96...104 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Setting point: Speed

Rack travel in mm: 0.6

: 500 Speed rpm Testina: Del.quantity cm3/: 142.0...145.0 1st rack travel in: 12.20 1000 s: (139.5...147.5) rpm : 1020...1030 Speed cm3 : 5.00Spread 2nd rack travel in: 4.00 1000 s: (7.0) rpm : 1060...1090 Speed Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/ : 145.0...148.0 1000 s: (142.5...150.5) 3rd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1200 rpm : 0.30...1.70 Speed Aneroid pressure h: -Speed rpm : 550 Del.quantity cm3/ : 104.0...106.0 LOW IDLE 1 Control Lever 1000 s: (102.0...108.0) position degrees: 70...78 Setting point w/out bumper spring rpm : 400 BREAKAWAY Rack travel in mm: 5.7 1st version Testing: 1mm rack travel less than Speed rpm : 100 Minimum rack trave: 19.00 full load rack tr: 12.20 : 400 Speed rom rpm : 1020...1030 Speed Rack travel in mm : 5.60...5.80 STARTING FUEL DELIVERY TORQUE CONTROL Torque control curve - 1st version 1st speed rom : 1000 Speed : 100 rpm Rack travel in m: 13.20...13.30 Del.quantity cm3/: 127.0...137.0 rpm : 500 2nd speed 1000 s: (124.0...140.0) Rack travel in m: 13.20...13.30 Rack travel in mm : 19.50...21.00 3rd speed rpm : 700 Rack travel in m: 13.20...13.30 5th speed rpm : 400 LOW IDLE Rack travel in m: 14.40...14.70 Speed : 400 rpm Rack travel in mm : 6.10...6.30 Aneroid/Altitude Del.quantity cm3/: 20.5...24.5 Compensator Test 1000 s: (18.0...27.0) cm3 : 3.50Spread 1000 s: (5.00) 1st version Setting Remarks: Speed : 550 rpm Pressure hPa : -: 11.10...11.30 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 330 Rack travel in m: 11.60...11.70 2nd pressure hPa : 510 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.20...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

A10

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet Edition : 21.08.92 Replaces : 02.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 114 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm : 1080EP type number : 0 413 406 165 Governor Rack travel in mm : 13.00...13.10 Governor design. : RSV750...1100Mw0A325 Del.quantity cm3/: 10.3...10.5 : 0 420 085 188 Governer no. 100 s: (10.1...10.7) Customer-spec. information Customer : MB-NFZ Spread cm3 : 0.3Engine : 0M366LA 100 s: (0.6) 1st version kW : 170.0 rpm : 750.02nd speed Rated speed : 2200 Rack travel in mm: 5.8...6.3 Del.quantity cm3/: 1.0...1.4 TEST BENCH REQUIREMENTS 100 s: (0.7...1.6) cm3 : 0.3Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 419 992 198 Degree: -3 rpm : 800 Speed Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP assembly : 0 681 343 009 1st version Open ind Speed rpm : 1080 pressure, bar : 172...175 : 103.0...105.0 Del.quantity 1000 : (101.0...107.0) : 3.50 Spread cm3 Test lines : 1 680 750 089 1000 : (6.00) Outside diameter RATED SPEED x Wall thickness : 8.00x2.50x600 x Length mm 1st version Control lever (A) Injection pump setting values position degrees: 82...90 Insp. values in parentheses Set equal delivery quant. Setting point:

Speed

Testing:

Speed

rpm

Rack travel in mm: 0.6

1st rack travel in: 12.0

: 800

rpm : 1120..1125 *

A11

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

2nd rack travel in: 4.00

rpm : 1145...1158 Speed

4th rack travel in: 1550

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 70...78

Setting point w/out bumper spring

rpm : 750 Rack travel in mm: 6.0

Testina:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 750 Speed

Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 13.00...13.10

2nd speed rpm : 925

Rack travel in m: 13.40...13.60 3rd speed rpm : 750

Rack travel in m: 13.90...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 108.0...111.0 1000 s: (105.5...113.5)

cm3 : 5.00 Spread 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.0

rpm : 1120...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

rpm : 750

Rack travel in mm : 5.80...6.30

A12

Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 25...33 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB : 21.08.92 Edition : 07.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 116 Injection pump Pump designation : PES6MW100/720RS1131 EP type number : 0 413 406 123 Governor Governor design. : RSV350...1300Mw0A329 -14: 0 420 085 192 Governer no. Customer-spec. information Customer : MB-NFZ Engine : OM 366 A 1st version kw : 125.0 : 2600 Rated speed TEST BENCH REQUIREMENTS Test oil inlei temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 : 1 680 750 089 Test Lines Outside diameter x Wall thickness x Length mm : 8.00X2.50X600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

: 3.70...3.80

: (3.65...3.85)

per values ___

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1280 Rack travel in mm: 10.50...10.60 Del.quantity cm3/: 8.8...9.0 100 s: (8.6...9.2) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1,6) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1280 Aneroid pressure h: 800 Del.quantity : 88.0...92.0) : 3.50 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 110...118 Setting point: rom Rack travel in mm: 0.6 Testing: 1st rack travel in: 9.50 rpm : 1330...1335 * Speed

2nd rack travel in: 4.00

rom : 1410...1423 Speed 4th rack travel in: 1550 rom : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 75...83 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 5.00...5.50

Rack travel in mm : 2.00 Speed rpm : 420...480

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1280 1st speed

Rack travel in m: 10.50...10.60

rpin : 800 2nd speed

Rack travel in m: 11.20...11.30

3rd speed rpm : 1100

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom

: 500 Pressure hPa : -

Rack travel mm : 9.20...9.30

Measurement

1/min : 500 Speed

1st pressure hPa : 300 Rack travel in m: 9.70...9.90

2nd pressure hPa : 470

Rack travel in m: 10.50...10.70

3rd pressure hPa : 800

Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 800 Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 49.0...51.0

1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.00...5.50

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 80...88 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : MB : 21.08.92 Edition : 03.92 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 403 476 117 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump BASIC SETTING Pump designation: PES6MW100/720RS1131-1st speed rpm: 1180 EP type number : 0 413 406 165 Governor Rack travel in mm: 13.10...13.20 Governor design. : RSV750...1200MNOA329 Del.quantity cm3/: 10.6...10.8 : 0 420 085 193 Governer no. 100 s: (10.4...11.0) Customer-spec. information Customer : MB-NFZ cm3 : 0.3Spread Engine : 0M366LA 100 s: (0.6) 1st version kW : 148.0 rpm : 750.02nd speed Rated speed : 2400 Rack travel in mm: 4.8...5.3 Del.quantity cm3/: 1.0...1.4 TEST BENCH REQUIREMENTS 100 s: (0.7...1.6) cm3 : 0.3Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-lever position : 1 419 992 198 Degree: -3 rpm : 800 Speed Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder Governor spring pre-tension : 0 681 343 009 assembly Click setting x : 4.00Openina FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 172...175 1st version rpm : 1180 Speed Test lines : 1 680 750 089 Aneroid pressure h: 1000 Del.quantity : 700.0...10.0) Outside diameter x Wall thickness Spread cm3 : 3.50 x Length mm : 8.00X2.50X600 1000 : (6.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values __ Control lever position degrees: 93...101 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Setting point:

: 800

rpm Rack travel in mm: 0.6

Speed

Testina:

1st rack travel in: 12.2

Speed rpm : 1230...1235 2nd rack travel in: 4.00

rpm : 1310...1323 Speed

4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 72...80

Setting point w/out bumper spring

COM Rack travel in mm: 5.0

Testina:

Speed man : 100

Minimum rack trave: 19.00 rpm : 750

Rack travel in mm : 4.80...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm: 2.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rom

Pressure hPa :

Rack travel mm : 9.30...9.40

Measurement

Speed $1/\min : 500$

1st pressure hPa : 350

Rack travel in m: 10.80...10.90

2nd pressure hPa : 500

Rack travel in m: 11.80...12.10

3rd pressure hPa : 1000

Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/: 95.5...98.5

1000 s: (93.0...101.0)

cm3 : 3.50Spread

1000 s: (6.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 35.0...37.0

1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.2

Speed rpm : 1230...1235

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 100.0...110.0

1000 s; (97.0...113.0)

LOW IDLE

Speed rpm : 750 Rack travel in mm : 4.80...5.30

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

* Read off speed set under 1. Add 80...38 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: MB

Edition

: 21.08.92

Replaces Test oil

: 07.92 : ISO-4113

Combination no.

: 0 403 476 120

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number

: 0 413 406 165

Governor

Governor design. : RSV350...750MWOA336-

Governer no.

: 0 420 085 198

Customer-spec. information

Customer

: MB-NFZ

Engine

: OM 366 LA

1st version kW

: 87.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

Firing order

: 3.60...3.70

: (3.55...3.75)
Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...6.3 Del.quantity cm3/ : 0.9...1.3 100 s: (0.6...1.5)

Spread

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity

: 85.0...87.0

1000 : (83.0...89.0)

Spread

: 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 71...79

Setting point:

Speed

rpm

Rack travel in mm: 0.6

Testina: 1st rack travel in: 11.5 rpm : 750...755 * Speed 2nd rack travel in: 4.00 Speed rpm : 775...788 4th rack travel in: 850 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 57...61 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm : 5.8 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.30...6.30 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.5 Speed rpm : 750...755 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 88.0...98.0 1000 s: (85.0...101.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.30...6.30 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: * Read off speed set under 1. Add 25...33 min-1 to this speed. The

* Read off speed set under 1. Add 25...33 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC

: 21.09.92 Edition Replaces : 07.92 : ISO-4113 Test oil

Combination no. : 0 403 476 121

Injection pump

Pump designation : PES6MW100/320RS1198-

EP type number : 0 413 406 211

Governor

Governor design. : RSV35G...1250MW2A347

Governer no. : 0 420 085 199

Customer-spec. information Customer : NAVISTAR

Engine : DT-466

1st version kW : 172.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35

: (3.20...3.40) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 900

: 132.5...134.5 Del.quantity 1000 : (130.5...136.5)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 96...104

Setting point:

: 800 Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.10

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1345...1355 Speed

3rd rack travel in: 4.00

rpm : 1350...1380 Speed

4th rack travel in: 1500

\$peed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 66...74

Setting point w/out bumper spring

: 350 rom Rack travel in mm: 4.7

Testing:

Speed : 100 rpm Minimum rack trave: 19.00

: 350 Speed mari Rack travel in mm : 4.60...4.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 12.00...12.10 Rack travel mm

Measurement

1/min : 500 Speed

Rack travel in m: 8.80...9.00

2nd pressure hPa : 260

Rack travel in m: 10.20...10.30

3rd pressure hPa : 500

Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 80.5...84.5 1000 s: (78.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

A20

: 1290...1300 Speed rpm

STARTING FUEL DELIVERY

Speed : 100 ripm

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rom : 350

Rack travel in mm : 4.60...4.80 Del.quantity cm3/ : 15.5...19.5

1000 s: (13.0...22.0)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

: IHC #1819527C91

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks : 3.00...3.10 Prestroke mm : (2.95...3.15) Test sheet Rack travel in mm : 13.50...0.00 : DAF Edition : 05.10.92 Firing order : 1-5- 3- 6- 2- 4 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 122 Phasing : 0-60-120-180-240-300 Phasina Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/320RS1227 BASIC SETTING EP type number : 0 413 406 215 Governor Governor design. : RSV325...1300MW0A350 1st speed rpm: 1000 : 0 420 085 200 Governer no. Rack travel in mm : 13.10...13.20 Cust. part no. : 1249933 Del.quantity cm3/: 10.8...11.0 Customer-spec. information Customer : DAF 100 s: (10.6...11.2) Engine : NS156L cm3 : 0.3Spread 1st version kW : 156.0 100 s: (0.6) Pated speed : 2600 2nd speed rpm : 325.0TEST BENCH REQUIREMENTS Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 0.7...1.1 Test oil 100 s: (0.4...1.3) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 1 419 992 198 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 Speed rpm : 800 Test nozzle holder Rack travel in mm : 0.30...1.00 : 1 688 901 101 assembly Governor spring pre-tension Opening 1 4 1 Click setting x : 4.00pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,6 1st version Speed rpm : 1000 Aneroid pressure h: 1000 Aneroid Del.quantity 1000 Test lines : 1 680 750 008 : 108.5...110.5 : (106.5...112.5) Outside diameter : 3.50 Spread cm3 x Wall thickness 1000 : (6.00): 6.00x2.00x600 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant Control lever per values position degrees: 98...106

Setting point:

BEGINNING OF DELIVERY

Speed ripm : 800 Rack travel in mm: 0.6 Testing: 1st rack travel in: 12.10 rpm : 1330...1340 Speed 2nd rack travel in: 4.00 rpm : 1400...1430 Speed 3rd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring COM Rack travel in mm: 4.0 Testing: Speed : 100 rpm Speed : 325 rpm Rack travel in mm : 3.90...4.10 Rack travel in mm: 2.00 Speed rpm : 450...520 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 600 hPa : 1000 Pressure Rack travel mm : 13.10...13.20 Measurement $1/\min : 600$ Speed 1st pressure hPa : 500 Rack travel in m: 12.50...12.60 2nd pressure hPa : 290 Rack travel in m: 11.10...11.40 3rd pressure hPa : -Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

Speed rpm : 1300 Del.quantity cm3/ : 104.0...107.0

cm3 : 3.501000 s: (6.0)

: 600

1000 s: (101.5...109.5)

Aneroid pressure h: 1000

Aneroid pressure h: -

rpm

Del.quantity cm3/: 63.0...65.0 1000 s: (61.0...67.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1330...1340

LOW IDLE

Speed : 325 rpm Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: DAF #1249933

Start-of-delivery mark is at start of delivery of cylinder 1

Spread

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC : 21.08.92 Edition : 07.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 124 Injection pump Pump designation : PES6MW100/320RS1213 EP type number : 0 413 406 203 Governor Governor design. : RSV350...1150MW8A347 -2 Governer no. : 0 420 085 202 Cust. part no. : 1818557c91 Customer-spec, information Customer : NAVISTAR : DT-466 Engine : 204.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 101

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.90...15.00

Del.quantity cm3/: 16.4...16.6

100 s: (16.2...16.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 164.5...166.5 Del.quantity 1000 : (162.5...168.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Setting point: rpm : 800 Speed Rack travel in mm: 0.6 Testing: 1st rack travel in: 13.90 rpm : 1160...1170 Speed 2nd rack travel in: 4.00 rpm : 1230...1240 Speed 3rd rack travel in: 4.00 rpm : 1235...1245 Speed 4th rack travel in: 1350 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 350 rom Rack travel in mm : 5.00...5.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : 1200 Pressure : 14.90...15.00 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 300 Rack travel in m: 11.10...11.20 3rd pressure hPa : 760 Rack travel in m: 13.20...13.60 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/ : 79.5...83.5 1000 s: (77.5...85.5) **BREAKAWAY** 1st version

A24

1mm rack travel less than full load rack tr: 13.90 Speed rpm : 1160...1170 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 170.0...190.0 1000 s: (165.0...195.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.501000 s: (5.00) Remarks: : IHC #1818557091

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks : 3.25...3.35 Prestroke mm : (3.20...3.40) Test sheet : IHC Rack travel in mm : 9.00...12.00 Edition : 31.08.92 Firing order : 1-5-3-6-2-4 Replaces : 07.92 Test oil : ISO-4113 Combination no. : 0 403 476 125 Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation : PES6MW100/32DRS1198-BASIC SETTING EP type number : 0 413 406 211 Governor 1st speed rpm: 1100 Governor design. : RSV350...1100Mw2A347 Rack travel in mm : 12.70...12.80 Governer no. : 0 420 085 203 Del.quantity cm3/: 13.9...14.1 Customer-spec, information Customer : NAVISTAR 100 s: (13.7...14.3) Engine : DT-466 Spread cm3 : 0.31st version kW : 184.0 100 s: (0.6) Rated speed : 2200 2nd speed rpm : 350.0TEST BENCH REQUIREMENTS Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.5...1.9 Test oil 100 s: (1.3...2.2) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 038 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 2.80 Degree: -3 rpm : 800 Speed Test nozzle holder Rack travel in mm : 0.30...1.00 assembly : 1 688 901 101 Governor spring pre-tension Opening Click setting x : 4.00: 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,6 1st version Speed rpm : 1100 Aneroid pressure h: 900 Test Lines : 1 680 750 008 Del.quantity : 139.0...141.0 1000 : (137.0...143.0) Outside diameter : 3.50 Spread cm3 x Wall thickness 1000 : (6.00) x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control lever per values ____ position degrees: 90...98 BEGINNING OF DELIVERY Setting point:

A25

: 800 **beea**2 rpm Rack travel in mm: 0.6 Testina: 1st rack travel in: 11.70 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1195...1205 Speed 3rd rack travel in: 4.00 Speed rpm : 1200...1210 4th rack travel in: 1350 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rom : 350 Speed Rack travel in mm: 4.9 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 4.80...5.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 900 Pressure Rack travel mm : 12.70...12.80 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.30...9.50 2nd pressure hPa : 255 Rack travel in m: 10.30...10.40 3rd pressure hPa : 535 Rack travel in m: 11.70...12.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500

Del.quantity cm3/: 83.0...87.0 1000 s: (81.0...89.0) **BREAKAWAY** 1st version

1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1140...1150 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (147.0...173.0) Rack travel in mm: 19.00...21.00 LOW IDLE

rpm : 350Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 15.5...19.5 1000 s: (13.0...22.0) cm3 : 3.50Spread 1000 s: (5.00) Remarks:

: IHC #1819454C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VME

Edition : 03.12.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 126

Injection pump

Pump designation : PES6MW100/320RS1132

: 0 413 406 124 EP type number

Governor

Governor design. : RSV300...1050MW4A352

Governer no. : 0 420 085 201

Customer-spec. information : VME

Customer

Engine : TD 61

1st version kW : 122.0

Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00

: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 92.0...94.0 Del.quantity

1000 : (90.0...96.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.10

A27

Speed rpm : 1070...1080 2nd rack travel in: 4.00 Speed rpm : 1110...1140 3rd rack travel in: 4.00 rpm : 1120...1150 Speed 4th rack travel in: 1250 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 76...84 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 300 Rack travel in mm: 5.50...5.70 Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1000 hPa : 1000 Pressure Rack travel mm : 11.10...11.20 Measurement Speed 1/min: 1008 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 80 Rack travel in m: 10.30...10.40 3rd pressure hPa : 140 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 1000 Del.quantity cm3/ : 77.0...79.0 1000 s: (75.0...81.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1070...1080 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

A28

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 03.12.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 127 Injection pump Pump designation: PES6MW100/720RS1205 EP type number : 0 413 406 195 Governor Governor design. : RSV750...1250MW0A325 : 0 420 085 208 Governer no. Customer-spec. information Customer : MB-NFZ Engine : 0M 366 LA 1st version kW : 185.0 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00X2.50X600 (A) Injection pump setting values

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1230Rack travel in mm : 15.20...15.30 Del.quantity cm3/: 12.4...12.6 100 s: (12.2...12.8) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 750.0 Rack travel in mm: 4.9...5.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 1.80FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1230 : 124.0...126.0 Del.quantity 1000 : (122.0...128.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 90...98 Setting point: Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 14.2

rpm : 1270...1275 * Speed

2nd rack travel in: 4.00

Speed rpm : 1295...1308 4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 750 Rack travel in mm: 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 750

Rack travel in mm : 4.90...5.50

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 120.0...123.0

1000 s: (117.5...125.5)

cm3 : 5.00Spread 1000 s: (7.0)

Aneroid pressure h: -

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.2

Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 110.0...120.0

1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 750 Rack travel in mm : 4.90...5.50 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50Spread

1000 s: (5.00)

Remarks:

* Read off speed set under 1. Add 25...33 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 7,3 B : 27.11.92 : 09.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 486 103 Injection pump Pump designation : PES6MW100/321RS1208 EP type number : 0 413 406 199 Governor Governor design. : RSV300...1050Mw0A802 : 0 420 085 156 Governer no. Customer-spec. information Customer : MAN Engine : D0826LE 10 1st version kw : 165.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1050Rack travel in mm : 14.00...14.10 Del.quantity cm3/: 14.0...14.2 100 s: (13.8...14.4) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.1...1.5 100 s: (0.8...1.7) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.20FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050: 140.0...142.0 Del.quantity 1000 : (138.0...144.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 87...95 Setting point: rom Rack travel in mm : 0.6 Testing:

1st rack travel in: 13.00

Prestroke mm

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1300 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 64...72 Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.1

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 300 Speed

Rack travel in mm : 5.00...5.20

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 139.5...142.5 **1000** s: (137.0...145.0)

cm3 : 5.00

Spread 1000 s: (7.0)

Aneroid pressure h: -Speed rpm : 800

Del.quantity cm3/: 145.5...148.5 1000 s: (143.0...151.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 **beeq**2

Del.quantity cm3/: 130.0...150.0

1000 s: (127.0...153.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

: MAN #3-7103

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 548 027AA

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number : 0 413 508 108

Governor

Governor design. : RQV300...1150MW99

Governer no. : 0 420 083 163

Customer-spec, information

Customer : KHD

Engine : F8L513

1st version kw : 163.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-5-4- 3

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3190 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

: 11.10...11.50 travel mm

rpm : 1190 2nd speed

: 10.10...10.30 travel mm

3rd speed rpm : 400

: 2.90...3.50 rpm : 300 travel mm

4th speed

travel mm : 2.20...2.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 93.0...95.0 Del.quantity

1000 : (91.0...97.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

805

1st version Control lever position degrees: 45...53 Setting point: Speed rpm : 1200 Rack travel in mm: 16.5 Testing: 1st rack travel in: 9.50 rpm : 1190...1200 Speed 2nd rack travel in: 3.50 Speed rpm : 1280...1310 4th rack travel in: 1370 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 5.0 Testing: Speed rpm : 100 Minimum rack trave: 6.50 rpm : 300 Rack travel in mm : 4.90...5.10 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.50...10.60 2nd speed rpm : 650 Rack travel in m: 10.80...10.90 3rd speed rpm : 1000 Rack travel in m: 10.70...10.80 START CUT-OUT Speed 1/min : 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/ : 91.5...94.5 1000 s: (89.0...97.0) BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 9.50

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 027AB Injection pump Pump designation : PE8MW100/720L31173 EP type number : 0 413 508 108 Governor Governor design. : RQV300...1150MW99 Governer no. : 0 420 083 163 Customer-spec. information Customer : KHD Engine : F8L513 ist version kW : 170.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1150 Rack travel in mm: 10.60...10.70 Del.quantity cm3/: 9.4...9.6 100 s: (9.2...9.8) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1280 travel mm : 11.10...11.50 2nd speed rpm : 1190 : 10.10...10.30 travel mm 3rd speed rpm : 400 travel mm : 2.90...3.50 4th speed rpm : 300 travel mm : 2.20...2.60 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1200 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Del.quantity : 94.0...96.0 BEGINNING OF DELIVERY 1000 : (92.0...98.0) Test pressure, bar: 30...32 : 3.50 Spread cm3 1000 : (6.00) Prestroke mm : 3.10...3.20 : (3.05...3.25) RATED SPEED Rack travel in mm : 9.00...12.00

Firing order

: 1-8-7-2-6-5-

4- 3

1st version Control lever position degrees: 45...53 Setting point: Speed rpm : 1200Rack travel in mm: 16.5 Testing: 1st rack travel in: 9.60 rpm : 1190...1200 Speed 2nd rack travel in: 3.50 rpm : 1280...1310 Speed 4th rack travel in: 1370 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 5.0 Testing: Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm : 300 Rack travel in mm : 4.90...5.10 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.60...10.70 2nd speed rpm : 650 Rack travel in m: 10.90...11.00 3rd speed rpm : 1000 Rack travel in m: 10.80...10.90 START CUT-OUT Speed 1/min: 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 650 Del.quantity cm3/: 92.5...95.5 1000 s: (90.0...98.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet Edition

: KHD : 21.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 548 027AC

Injection pump

EP type number

Pump designation : PE8MW100/720LS1173

Governor

: 0 413 508 108

Governor design. : RQV300...1150Mw99

Governer no.

: 0 420 083 163

Customer-spec. information Customer : KHD

Engine

: F8L513

1st version kW Rated speed

: 178.0 : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

B09

Firing order

: 1- 8- 7- 2- 6- 5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm : 1150

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

: 11.10...11.50 travel mm

2nd speed rpm : 1190

travel mm : 10.10...10.30

rpm : 400 3rd speed

: 2.90...3.50 travel mm

rpm : 300 4th speed

: 2.20...2.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150 Del.quantity

: 99.0...101.0

1000 : (97.0...103.0)

Spread cm3

: 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Setting point:

rpm : 1200 Speed Rack travel in mm: 16.5

Testing:

1st rack travel in: 10.00

rpm : 1190...1200 Speed

2nd rack travel in: 3.50

rpm : 1285...1315 Speed

4th rack travel in: 1370

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50

Speed rpm : 300 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.00...11.10

2nd speed rpm : 650

Rack travel in m: 11.30...11.40

rpm : 1000 3rd speed

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min: 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 650 Speed

Del.quantity cm3/: 98.5...101.5

1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1190...1200 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5) cm3 : 3.50 1000 s: (5.50)

Spread

Remarks:

B10

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 548 027AD

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number

: 0 413 508 108

Governor

Governor design. : RQV300...1150MW99

Governer no.

: 0 420 083 163

Customer-spec. information Customer : KHD

Engine

: F8L513

1st version kW

: 174.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 740 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

B11

Firing order

: 1-8-7-2-6-5-

4- 3

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm : 1150

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 9.7...9.9

100 s: (9.5...10.1)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

Spread

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1280

travel mm 2nd speed : 11.10...11.50

rpm : 1190 : 10.10...10.30

travel mm 3rd speed

rpm : 400

travel mm

: 2.90...3.50

300

4th speed travel mm

Lbu : 2.20...2.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed Del.quantity

rpm : 1150

: 97.0...99.0

1000 : (95.0...101.0)

: 3.50

cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 45...53

Setting point:

Speed rpm : 1200 Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.80

Speed rpm : 1190...1200

2nd rack travel in: 3.50

Speed rpm : 1285...1315

4th rack travel in: 1370

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

Speed nom : 100 Minimum rack trave: 6.50

Speed rpm : 300 Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.80...10.90

rpm : 650 2nd speed

Rack travel in m: 11.10...11.20

3rd speed rpm : 1000

Rack travel in m: 11.00...11.10

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 96.5...99.5

1000 s: (94.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

B12

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Note remarks

Test sheet : KHD

Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 548 027AE

Injection pump

Pump designation: PE8MW100/720LS1173

EP type number : 0 413 508 108

Governor

Governor design. : RQV300...1150Mw99

Governer no. : 0 420 083 163

Customer-spec. information : KHD

Customer

Engine : F8L513

1st version kW : 188.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-4- 3

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 11.10...11.50

2nd speed rpm : 1190

travel mm : 10.10...10.30

3rd speed rpm : 400 travel mm : 2.90...3.50

300 4th speed rpm :

: 2.20...2.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 112.0...114.0 Del.quantity

1000 : (110.0...116.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Setting point:

Speed rpm : 1200 Rack travel in mm: 16.5

Testing:

1st rack travel in: 10.80 Speed rpm : 1190...1200

2nd rack travel in: 5.50

rpm : 1290...1320 Speed

4th rack travel in: 1370

Speed pm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.0

Testing:

Speed : 100 nom Minimum rack trave: 6.50

Speed rpm : 300 Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150 Rack travel in m: 11.80...11.90

2nd speed

nd speed rpm : 650 Rack travel in m: 12.10...12.20

rpm : 1000 3rd speed

Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rom

Del.quantity cm3/: 110.5...113.5 1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

B14

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...47.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD : 21.09.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 548 027AF Injection pump Pump designation : PE8MW100/720LS1173 EP type number : 0 413 508 108 Governor Governor design. : RQV300...1150MW99 Governer no. : 0 420 083 163 Customer-spec. information Customer : KHD Engine : F8L513 1st version kW : 168.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Firing order : 1-8-7-2-6-5-Phasing : 0-45-90-135-180-225-270-315 Tolerance + - * : 0.50 (0.75)BASIC SETTING 1st speed rpm : 1150 Rack travel in mm : 10.70...10.80 Del.quantity cm3/: 9.6...9.8 100 s: (9.4...10.0) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1280 : 11.10...11.50 travel mm 2nd speed rpm : 1190 travel mm : 10.10...10.30 3rd speed rpm : 400 : 2.90...3.50 travel mm rpm : 3004th speed : 2.20...2.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1200 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed : 96.0...98.0 Del.quantity 1000 : (94.0...100.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

Prestroke mm

: 3.10...3.20 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

1st version Control Lever

position degrees: 45...53

Setting point:

Speed : 1200 rpm Rack travei in mm : 16.5

Testing:

1st rack travel in: 9.70

Speed rpm: 1190...1200 2nd rack travel in: 3.50 Speed rpm: 1280...1310 4th rack travel in: 1370

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 Speed : 300 rom

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.70...10.80

2nd speed

nd speed rpm : 650 Rack travel in m: 11.00...11.10

3rd speed rpm : 1000

Rack travel in m: 10.90...11.00

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 92.5...95.5

1000 s: (90.0...98.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

B16

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (3.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 548 032AD

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number

: 0 413 508 108

Governor

Governor design: RQ300/1150MW61-2

Governer no.

: 0 420 082 036

Customer-spec. information

Customer

: KHD

Engine

: F8L513

1st version kW

: 163.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 740 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.10...3.20

: (3.05...3.25)

Rack travel in mm: 9.00...12.00

B17

Firing order

: 1- 8- 7- 2- 6- 5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1150

Rack travel in mm: 10.30...10.40

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.1...1.5

Spread

100 s: (0.8...1.7)

cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270

travel mm

: 8.60...9.00

2nd speed

rpm : 1210

travel mm 3rd speed

: 6.60...6.80 rpm : 420

travel mm 4th speed : 3.50...4.10

: 300

travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 107

rpm

Speed

Speed

Spread

rpm : 600

Rack travel in mm : 19.20...20.80

: 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Del.quantity

rpm : 1150

: 89.0...91.0

1000 : (87.0...93.0)

cm3

: 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 26...34

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.30

Speed rpm : 1190...1205 2nd rack travel in: 3.50

rpm : 1235...1265 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring Speed rpm : 300

Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50

: 300 rpm

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 10.30...10.40

2nd speed rpm : 650

Rack travel in m: 10.60...10.70

3rd speed rpm : 1000

Rack travel in m: 10.50...10.60

START CUT-OUT

 $1/\min$: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 650 rpm

Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1190...1205

STARTING FUEL DELIVERY

B18

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0

1000 s: (8.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 032AE Injection pump Pump designation : PE8MW100/720LS1173 EP type number : 0 413 508 108 Governor Governor design. : RQ300/1150MW61-2 Governer no. : 0 420 082 036 Customer-spec. information Customer : KHD Engine : F8L513 1st version kW : 188.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 3.10...3.20

Rack travel in mm : 9.00...12.00

: (3.05...3.25)

Firing order : 1-8-7-2-6-5-4- 3 Phasing : 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1150 Rack travel in mm : 11.80...11.90 Del.quantity cm3/: 11.2...11.4 100 s: (11.0...11.6) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1270 travel mm : 8.60...9.00 2nd speed rpm : 1210 travel mm : 6.60...6.83 3rd speed : 420 והמיז : 3.50...4.10 travel mm rpm 4th speed : 300 : 1.50...1.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 107 Speed rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Del.quantity : 112.0...114.0 1000 : (110.0...116.0) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 26...34

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testina:

1st rack travel in: 10.80

rpm : 1190...1205 Speed

2nd rack travel in: 3.50

Speed rpm : 1245...1275 4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 300

Rack travel in mm: 5.0

Testina:

Speed : 100 riom Minimum rack trave: 6.50 Speed : 300 riom

Rack travel in nm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150 Rack travel in m: 11.80...11.90

2nd speed rpm : 650

Rack travel in m: 12.10...12.20

3rd speed rpm : 1000

Rack travel in m: 12.00...12.10

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 650 rom

Del.quantity cm3/: 110.5...113.5 1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1190...1205 Speed

STARTING FUEL DELIVERY

B20

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: KHD

Edition

: 21.09.92

Reptaces

Test oil

: ISO-4113

Combination no.

: 0 403 548 032AF

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number

: 0 413 508 108

Governor

Governor design. : RQ300/1150MW61-2

Governer no. : 0 420 082 036

Customer

Customer-spec. information

: KHD

Engine

: F8L513

1st version kW

: 168.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 740 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.10...3.20 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-5-4- 3

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

Spread

rom : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270

: 8.60...9.00 travel mm

2nd speed rpm : 1210

travel mm : 6.60...6.80

3rd speed rpm : 420

travel mm : 3.50...4.10

: 300 4th speed rpm

: 1.50...1.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150

: 96.0...98.0

Del.quantity

1000 : (94.0...100.0) : 3.50

cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever position degrees: 26...34 Setting point: Speed rium Rack travel in mm: 20.0 Testina: 1st rack travel in: 9.70 Speed rpm : 1190...1205 2nd rack travel in: 3.50 Speed rpm : 1240...1270 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 8...16 Setting point w/out bumper spring rpm : 300 Rack travel in am : 5.0 Testing: Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm Rack travel in mm : 4.90...5.10 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.70...10.80 2nd speed rpm : 650 Rack travel in m: 11.00...11.10 3rd speed rpm : 1000 Rack travel in m: 10,90...11.00 START CUT-OUT Speed 1/min : 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/: 92.5...95.5 1000 s: (90.0...98.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 Speed rpm : 1190...1205

STARTING FUEL DELIVERY

B22

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (132.0...158.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3: 3.50 1000 s: (5.50) Remarks:

Note remarks

Test sheet Edition

: KHD : 21.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 548 033AA

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number : 0 413 508 108

Governor

Governor design. : RQV450...1150MW70-1

Governer no. : 0 420 083 179

Customer-spec. information Customer

: KHD

Engine

: F8L513

1st version kW

: 178.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 740 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20

Prestroke mm

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

B23

Firing order

: 1-8-7-2-6-5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm : 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

Spread

rpm : 450.0

Rack travel in mm: 4.6...4.8

Del.quantity cm3/ : 1.1...1.5

100 s: (9.8...1.7)

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1230

travel mm 2nd speed : 9.50...9.90

travel mm

rpm : 1190

3rd speed

: 8.90...9.10

travel mm

rpm : 650 : 2.80...3.40

4th speed

rpm : 450

travel mm

: 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed Del.quantity

rpm : 1150

: 114.0...116.0

Spread

1000 : (112.0...118.0)

cm3

: 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Setting point:

Speed rpm : 1150 Rack travel in mm: 16.5

Testing:

1st rack travel in: 10.80 rpm : 1155...1165 Speed 2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1320

Speed pom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22 Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 4.7

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 : 450 rom

Rack travel in mm : 4.60...4.80

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.80...11.90

3rd speed rpm : 700

Rack travel in m: 11.70...12.00

START CUT-OUT

1/min : 370 (390) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80

rpm : 1155...1165 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

rpm : 450 Speed

B24

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Note remarks

Test sheet : KHD 13,4 F3 Edition : 05.10.92 Replaces : 03.90

Test oil : ISO-4113

Combination no. : 0 403 548 035

Injection pump

Pump designation : PE8MW100/720LS1173

Governor

EP type number : 0 413 508 108

Governor design. : RQ300/1000MW104-1

Governer no. : 0 420 082 041

Customer-spec. information Customer : KHD

Engine : F8L513

1st version kW : 150.0 Raited speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 8- 7- 2- 6- 5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 8.80...9.20

rpm : 1060 2nd speed

: 6.90...7.10 travel mm

3rd speed rpm : 450

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

B25

1st version Control lever

position degrees: 89...97

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.00

rpm : 1040...1055 Speed

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

Speed rpm : 200 Minimum rack trave: 6.50 Speed rpm : 300

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.00...10.10

rpm : 700 2nd speed

Rack travel in m: 11.20...11.30

3rd speed rpm : 900

Rack travel in m: 10.40...10.70

START CUT-OUT

Speed

1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/: 100.5...103.5

1000 s: (98.0...106.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

B26

Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0

1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

Set warm starting fuel delivery 100...105 cm 3 /1000 strokes at

n = 100 min -1 at spool

Note remarks

Test sheet Edition

: MB 5,7 a 15 : 27.11.92

Replaces

: 4.86

Test oil

: ISO-4113

Combination no.

: 9 400 085 283

Injection pump

EP type number

Pump designation : PES6A90D410RS2293 : 0 410 896 031

Governor

Governor design.

: RSV350...1250A0B1150

-3L

Governer no.

: 9 420 083 221

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: OM 352-A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1250

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 6.1...6.2

100 s: (5.9...6.4)

Spread

Spread

cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0Rack travel in mm: 7.1...7.3

Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7) cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250

: 61.5...62.5 Del.quantity

1000 : (59.5...64.5)

Spread

cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 9.00

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1335...1365 4th rack travel in: 1450

rpm : 0.30...1.70Speed

LOW IDLE 1

Control lever

position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 350

Rack travel in mm: 6.7

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00 Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.00...10.10

2nd speed rpm : 500 Rack travel in m: 10.00...10.20

5th speed rpm : 400

Rack travel in m: 11.20...11.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.00

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 200 Rack travel in mm : 14.20...14.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 i Edition : 27.11.92 Replaces : 12.91 Test oil : ISO-4113 Combination no. : 9 400 085 333 Injection pump Pump designation : PES4A95D41ORS2805 EP type number : 9 400 084 026 Governor Governor design.: RQV300...1400AB1065-21L : 9 420 080 303 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : OM 364 Engine 1st version kW : 66.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _ BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 4- 2 Phasing : 0-90-180-270 1olerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1400 Rack travel in mm : 9.70...9.80 Del.quantity cm3/ : 7.1...7.3 100 s: (6.9...7.5) Spread cm3 : 0.3100 s: (0.3) rpm : 300.02nd speed Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.5...1.1 100 s: (0.3...1.3) cm3 : 0.3Spread 100 s: (0.3) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1500 : 8.50...8.60 travel mm 2nd speed rpm : 300 travel mm : 0.80...1.30 3rd speed rpm : 500 : 2.30...2.80 travel mm rpm : 750 4th speed travel mm : 4.10...4.30 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 Del.quantity : 71.0...73.0 1000 : (69.0...75.0) : 3.50 Spread cm3 : (3.50) 1000 RATED SPEED

Prestroke mm

1st version Control lever position degrees: 107...115 Testing: 1st rack travel in: 8.70 Speed rpm : 1460...1470 2nd rack travel in: 4.00 rpm : 1540...1570 Speed 4th rack travel in: 1680 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 65...73 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 7.40...7.60 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 250 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 55.0...58.0 1000 s: (52.5...60.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.70 Speed rpm : 1460...1470 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...90.0 1000 s: (75.0...93.0)

Rack travel in mm : 13.80...14.00

Remarks:

Note remarks

Test sheet

: MWM

Edition

: 23.10.92

Replaces Test oil

: 08.92 : ISO-4113

Combination no. : 9 400 085 348

Injection pump

EP type number

Pump designation : PES6A95D41ORS2812 : 9 400 084 028

Governor

Governor design.: RSV350...900A7C627

-3R

Governer no.

: 9 420 083 263

Customer—spec. information Customer

Engine

: 6.10 TCA

1st version kW

: 154.5

Rated speed

: 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasina

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 13.6...13.8

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 350.0

100 s: (13.4...14.0)

Rack travel in mm: 5.4...5.6

Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.2)

Spread

Speed

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Del.quantity 1000

: 136.5...138.5 : (134.5...140.5)

Spread

: 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 102...110 Testing: 1st rack travel in: 13.00 rpm : 900...905 Speed 2nd rack travel in: 4.00 Speed rpm: 941...954 4th rack travel in: 1100 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 365...425 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 13.90...14.00 2nd speed rpm : 550 Rack travel in m: 13.90...14.10 rpm : 400 5th speed Rack travel in m: 15.20...15.80 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 900...905 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm: 350
Rack travel in mm: 5.40...5.60
Del.quantity cm3/: 15.5...19.5

1000 s: (13.0...22.0) cm3 : 3.50

1000 s: (5.50)

APPLICATION

Generator

Remarks:

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB Edition : 23.10.92 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.08) Combination no. : 9 400 085 350 BASIC SETTING Injection pump 1st speed rpm: 1300 Pump designation : FES6A95D41CRS2772 EP type number : 9 400 084 018 Rack travel in mm : 11.10...11.20 Governor Governor design. : RQV300...1300AB1066 Del.quantity cm3/: 9.8...10.0 -12L Governer no. : 9 420 080 331 100 s: (9.6...10.2) Customer-spec. information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.6) Engine : OM 366 LA rpm : 300.02nd speed : 154.5 1st version kW Rack travel in mm : 6.9...7.1 Rated speed : 2600 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6) cm3 : 0.3 TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Inlet press., bar: 1.50 : 0.80...1.30 travel mm 2nd speed rpm : 500 Test nozzle holder travel mm : 2.30...2.80 : 0 681 343 009 assembly rpm : 750 3rd speed travel mm : 4.10...4.30 Opening rpm : 15004th speed pressure, bar : 172...175 travel mm : 8.50...8.60 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter rpm : 1500 Speed x Wall thickness Rack travel in mm: 15.20...17.80 : 6.00x1.50x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1300Speed per values Aneroid pressure h: 700 98.0...100.0 1000 : (96.0...102.0) Del.quantity BEGINNING OF DELIVERY Test pressure, bar: 25...27 cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

Prestroke mm

: 3.20...3.30

: (3.15...3.35)

1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 10.10 rpm : 1360...1370 Speed 2nd rack travel in: 4.00 rpm : 1490...1520 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.90...7.10 CONSTANT REGULATION Speed rpm : 420...550 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 700 Rack travel mm : 11.10...11.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.60...8.90 2nd pressure hPa : 400 Rack travel in m: 10.30...10.40 3rd pressure hPa : 270 Rack travel in m: 9.00...9.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1360...1370 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...90.0 1000 s: (-) Rack travel in mm: 13.60...13.80 Remarks:

Speed rpm : 700
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)

Aneroid pressure h: -Speed rpm : 500

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.60...2.70 Note remarks : (2.55...2.75) Rack travel in mm : 9.00...12.00 Test sheet : VOL Firing order : 1-5-3-6-2-4 Edition : 27.11.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 458 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Pump designation : PE6P120A320RS3186 Time to cyl. no. : 1 EP type number : 0 411 826 756 Governor BASIC SETTING : RQV250...1025PA657 Governor design. -29 1st speed rpm: 700 : 9 420 080 312 Governer no. Rack travel in mm : 12.10...12.20 Customer-spec. information Customer : VOLVO Del.quantity cm3/: 21.0...21.2 Engine : T0102FS 100 s: (20.7...21.5) 1st version kW : 250.0 Spread cm3 : 0.5Rated speed : 2050 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : <u>2</u>50.0 2nd speed Rack travel in mm : 3.9...4.1 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.1 100 s: (1.3...2.3) Overflow valve Spread cm3 : 0.5: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Openina : 1.10...1.30 travel mm pressure, bar : 207...210 rpm : 5002nd speed : 4.10...4.90 travel mm Orifice plate 3rd speed rpm : 700 diameter mm travel mm : 0,8 : 6.30...6.70 : 900 4th speed rpm : 6.30...6.70 travel mm Test lines : 1 680 750 067 5th speed : 1025 rpm : 7.30...7.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1080 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

rpm : 700

Speed

Test pressure, bar: 25...27

Aneroid pressure h: 1000

: 210.0...212.0 Del.quantity

1000 : (207.0...215.0)

Spread

: 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Test ina:

1st rack travel in: 11.10

rpm : 1055...1065

2nd rack travel in: 4.00

rpm : 1120...1150 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 61...69

Testina:

Speed rom : 100

Minimum rack trave: 5.40

Speed rpm : 250 Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 hPa : 1**00**0 Speed rom Pressure

Rack travel mm : 12.10...12.20

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 8.70...9.00 2nd pressure hPa : 75

Rack travel in m: 8.90...9.10 *

3rd pressure hPa : 425

Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 146.0...148.0

1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1055...1065 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 250.0...290.0 1000 s: (246.0...294.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in nm : 3.90...4.10

Del.quantity cm3/: 16.0...21.0 1000 s: (13.5...23.5) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.60...4.70 : (4.55...4.75) Note remarks Rack travel in mm : 21.00...0.00 Firing order : 6-2-4-1-5-3 Test sheet : 27.11.92 Edition Replaces : 05.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 464 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A72GLS7257 EP type number : 9 400 087 081 BASIC SETTING Governor Governor design. : RQV300...1050PA1029 1st speed rpm: 700 : 9 420 080 325 Governer no. Rack travel in mm : 13.60...13.80 Customer-spec, information Customer : MERCEDES-BENZ Del.quantity cm3/: 25.8...26.0 Engine : OM 447 LA 100 s: (25.5...26.3) 1st version kW : 257.6 Spread cm3 : 0.5: 2100 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 5.1...5.4 inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.8: 1 419 992 198 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 105 GUIDE SLEEVE TRAVEL 1st speed rpm : 1050 Opening : 7.70...7.90 travel mm : 207...210 pressure, bar rpm : 300 2nd speed travel mm : 0.50...1.00 Orifice plate 3rd speed : 500 riphi diameter mm : 0,8 travel mm : 3.00...3.50 rpm : 700 4th speed : 5.20...5.70 travel mm Test lines : 1 680 750 075 5th speed rpm : 1165 travel mm : 9.20...9.70 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00X2.50X1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1120 Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 rpm : 700 Speed

Aneroid pressure h: 1000

Del.quantity : 258.0...260.0 1000 : (255.0...263.0) cm3: 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 12.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 beea LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed rpm : 100 Minimum rack trave: 8.00 : 300 rom Rack travel in mm : 5.10...5.30 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.40...13.60 and speed rpm : 700 Rack travel in m: 13.60...13.80 2nd speed rpm : 850 3rd speed Rack travel in m: 13.60...13.80 rpm : 950 4th speed Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1000 Pressure Rack travel mm : 13.60...13.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.10

Rack travel in m: 10.20...10.40 3rd pressure hPa : 700 Rack travel in m: 12.70...12.90 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1050 Speed Del.quantity cm3/: 244.5...247.5 1000 s: (241.5...250.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) Remarks:

2nd pressure hPa : 250

Note remarks

Test sheet

Edition

: 27.11.92

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 087 466

Injection pump

Pump designation : PES6P120A720LS7257

EP type number

: 9 400 087 081

Governor

Governor design.

: RQV300...1050PA1029

Governer no.

: 9 420 080 327

Customer-spec, information

Customer

: MERCEDES-BENZ

Engine

: CM 447 LA

1st version kW

: 301.8

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0.8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.60...4.70 : (4.55...4.75)

Rack travel in mm : 21.00...0.00

Firing order

: 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed

rom : 700

Rack travel in mm : 15.00...15.20

Del.quantity cm3/: 31.3...31.5

100 s: (31.0...31.8)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 300.0

Rack travel in mm: 5.1...5.4

Del.quantity cm3/: 1.4...2.0

Spread

100 s: (1.1...2.3) cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1050

travel mm

: 7.30...7.50

2nd speed

: 300 rpm

travel mm

: 0.50...1.00

3rd speed

: 500 rpm

travel mm

: 3.10...3.60

4th speed

: 700 rpm

travel mm

: 4.80...5.30 : 1200

5th speed

rom

travel mm

: 9.20...9.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Aneroid pressure h: 1500 : 313.5...315.5 Del.quantity 1000 : (310.5...318.5) : 5.00 Spread cm3 1000 : (9.00)RATED SPEED 1st version Control Lever position degrees: 116...124 Testing: 1st rack travel in: 14.00 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed rom : 100 Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mn : 5.10...5.30 CONSTANT REGULATION Speed rpm : 275...425 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : 1500 Rack travel mm : 15.00...15.20 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 10.70...11.00 2nd pressure hPa : 250 Rack travel in m: 11.10...11.30 3rd pressure hPa : 800 Rack travel in m: 14.00...14.20

1st version Aneroid pressure h: 1500 Speed : 1050 rom Del.quantity cm3/: 301.5...304.5 1000 s: (298.5...307.5) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.00 Speed rpm : 1095...1110 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 297.0...317.0 1000 s: (295.0...321.0)

Remarks:

Speed

START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : VOL

: 27.11.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 470

Injection pump

Pump designation : PE6P110A320RS3080-1

EP type number : 0 411 816 734

Governor

Governor design. : RQV250...1025PA919-1

Governer no. : 9 420 080 334

Customer-spec. information Customer : VOLVO

Engine : TD 102 T

1st version kW : 227.0 : 2050 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm:650

Rack travel in mm: 13.20...13.30

Del.quantity cm3/: 18.0...18.3

100 s: (17.7...18.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 3.7...4.2

100 s: (3.4...4.5)

cm3 : 0.3 Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1100 1st speed

travel mm : 8.30...8.50

2nd speed rpm : 250

travel mm : 0.40...0.90

3rd speed rpm : 550

: 4.40...4.90 travel mm

rpm : 800 4th speed

travel mm : 6.30...6.70

rpm : 1180 5th speed

: 9.60...10.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650 Aneroid pressure h: 1000

Del.quantity : 180.0....185.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.20

rpm : 1035...1095 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 61...69

Testing:

Speed rpm : 100 Minimum rack trave: 7.00

rpm : 250

Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...440

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 Pressure hPa : 1000

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.60

2nd pressure hPa : 360

Rack travel in m: 11.20...11.30 3rd pressure hPa : 600

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1000 Del.quantity cm3/ : 168.5...174.5 1000 s: (166.5...176.5)

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 128.5...131.5

1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1085...1095 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...200.0

1006 s: (146.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 37.5...42.5

1000 s: (34.5...45.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : VOL Edition : 27.11.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 471 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS3178 EP type number : 0 411 826 752 BASIC SETTING Governor Governor design: RQV250...950PA921-3 1st speed rpm: 700 Governer no. : 0 421 813 786 Rack travel in mm : 13.00...13.10 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 22.9...23.1 Engine : TD 122 F 100 s: (22.6...23.4) 1st version kW : 261.0 cm3 : 0.5Spread Rated speed : 1900 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Test oil Rack travel in mm: 4.6...4.8 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5) Overflow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed Openina travel mm : 1.00...1.40 pressure, bar : 207...210 2nd speed rpm : 450 travel mm : 3.60...4.20 Orifice plate 3rd speed ron: : 700 diameter mm : 0,8 travel mm : 6.30...6.70 4th speed : 985 rpm travel mm : 8.10...8.30 Test lines : 1 680 750 067 5th speed : 1060 rpm : 9.40...9.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1030 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

Speed

rpm : 700

Aneroid pressure h: 900

Test pressure, bar: 25...27

Del.quantity : 227.0...234.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 12.00 rpm : 980...990 Speed 2nd rack travel in: 4.00

rpm : 1060...1090 Speed

4th rack travel in: 1200

Speed nom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed : 100 rpm Minimum rack trave: 6.20 : 250 rpm

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom : 5GO Pressure hPa : 900

Rack travel mm : 13.00...13.10

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 90

Rack travel in m: 10.20...10.30 *

3rd pressure hPa : 600

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 163.0...165.0

1000 s: (160.0...168.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 17.5...22.5

1000 s: (14.5...25.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH IN. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : VOL Edition : 27.11.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 473 Tolerance * - * : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3178-1 EP type number : 0 411 826 764 BASIC SETTING Governor Governor design. : RQV250...950PA921-13 1st speed rpm: 700 : 0 421 813 796 Governer no. Rack travel in mm : 14.20...14.30 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 25.9...26.1 Engine : TD 122 FR 100 s: (25.6...26.4) : 300.0 1st version kW Spread cm3 : 0.5Rated speed : 1900 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Test oil Rack travel in mm: 4.8...5.1 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5) Overflow valve Spread cm3 : 0.5: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 Opening | travel mm pressure, bar : 207...210 2nd speed rpm : 450 travel mm : 3.60...4.20 Orifice plate 3rd speed rpm : 700 diameter mm : 0,8 travel mm : 6.40...6.60 4th speed rpm : 985 travel mm : 8.20...8.40 Test lines : 1 680 750 067 rpm : 1060 5th speed travel mm : 9.60...10.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1000 Insp. values in parentheses Set equal delivery quant. Rack travel in mm : 15.20...17.80 per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

: 5.00 Spread cm3 1000 (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 13.20 rpm : 990...1000 Speed 2nd rack travel in: 4.00

Speed rpm : 1090...1120 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testina:

Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm : 250 Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 1000

Rack travel mm : 14.20...14.30

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.00...10.20 2nd pressure hPa : 120 Rack travel in m: 10.40...10.50

3rd pressure hPa : 875

Rack travel in m: 13,80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0 1000 s: (160.0...168.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack fr. 13.20 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 270.0...310.0 1000 s: (266.0...314.0) Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.80...5.10 Del.quantity cm3/: 17.5...22.5 1000 s: (14.5...25.5) Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DEE Edition : 23.10.92 Phasing Replaces Test oil : ISO-4113 Tolerance + - ° Combination no. : 9 400 230 072 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A100D410RS2676 : 9 410 230 023 EP type number 1st speed Governor : RSV400...1100A2C2086 Governor design. -1L : 9 420 234 161 Governer no. Customer-spec, information Customer : JOHN DEERE Spread Engine : 6466T 1st version kW : 132.0 Rated speed : 2200 2nd speed TEST BENCH REQUIREMENTS Test oil Spread inlet temp. *C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 457 413 010 Inlet press., bar: 1.50 Speed Test nozzle holder assembly : 0 681 343 009 Click setting x : ?Openina : 172...175 pressure, bar 1st version Test lines : 1 680 750 008 Speed Outside diameter Del.quantity x Wall thickness x Length mm : 6.00x2.00x600 Spread cm3 (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values 1st version Control Lever BEGINNING OF DELIVERY Test pressure, bar: 32...34 Testing: Prestroke mm : 2.45...2.55

: (2.40...2.60)

: 0-60-120-180-240-300 : 0.50 (0.75) rpm : 1100 Rack travel in mm : 10.30...10.40 Del.quantity cm3/: 11.0...11.2 100 s: (10.8...11.4) cm3 : 0.4100 s: (0.6) rpm : 400.0Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9) cm3 : 0.6100 s: (0.8) Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1100 Aneroid pressure h: 700 : 110.0...112.0 1000 : (108.0...114.0) : 4.00 1000 : (6.50) position degrees: 48...56 1st rack travel in: 9.30 Speed rpm : 1145...1155

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

rom ; 400 Rack travel in mm: 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed COM : 400

Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve – 1st version

rpm : 1100 1st speed

Rack travel in m: 10.30...10.40

2nd speed rpm : 750

Rack travel in m: 11.70...11.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 700 Pressure

: 11.70...11.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 215

Rack travel in m: 11.30...11.40

3rd pressure hPa : 65

Rack travel in m: 9.90...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750 Del.quantity cm3/ : 126.0...130.0

1000 s: (124.0...132.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 87.0...91.0

1000 s: (85.0...93.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

: 400 Speed rpm

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE18160

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 15.5° after start of delivery cyl. 1.

Note inst. in remarks column

Test scheet

Edition : 03.12.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE3/10F1500L483

Type number : 0 460 403 016

Customer Part-No. :

Customer-specific information

Customer

Engine : HR 394 H

KW: 39 Power

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

°C with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 127.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00

mm: 450 x Length

Start of delivery

mm: -Prestroke

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1200 Speed

Setting value mm: 2.50...2.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1200 Speed

Setting value bar: 5.30...5.90

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 3.5

1000s.: (3.5)

Full-load del. w/out charge press.:

1/min: 1200 Speed

Del. quantity cm3/

1000s.: 44.00...45.00

Shutoff

electromagnet Volt: 12.0 cm3/: 3.5Dispersion

1000s.: (3.5)

Low-idle speed regulation

1/min: 460 Speed

Del. quantity cm3/ 1000s.: 10.50...14.50

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1620

Del. quantity cm3/

1000s.: 21.00...27.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 60.00...100.00

1000s.: 60.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1200

cm3/Inj.-qty.

difference 1000S.: 15.00...17.00 #

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP)

1.Speed 1/min: 1200

Supply pump pressure 2nd speed 1/min: 1700 bar: 0.10...0.30 # difference Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 5th speed 1/min: 1620 electromagnet Volt: 12.0 Inspection-pump test specifications Test specifications in parentheses Shutoff Timing-device characteristic: 1/min: 1500 mm: 3.60...4.40 mm: (3.30...4.70) 2nd speed TD travel Shutoff alectromagnet Volt: 12
Del. quantity cm3/: 37.00...47.00
1000s.: (36.00...48.00) Shutoff electromagnet Volt: 12 1/min: 1200 3rd speed 1/min: 1500 9th speed TD travel mm: 2.50...2.90 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 43.50...46.50 1000s.: (42.00...48.00) mm: (2.00...3.40) Shutoff electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 1.30...2.10 1/min: 1200 12th speed Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 44.00...45.00
10005.: (42.00...47.00) mm: (1.00...2.40) Shutoff electromagnet Volt: 12 1/min: 600 20th speed Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.50...48.50 1000S.: (44.00...50.00) 1/min: 600 2nd speed Supply-pump pressure bar: 2.80...3.40 Shutoff Mech. shutoff: electromagnet Volt: 12 3rd speed 1/min: 1200 Electr. shutoff: Supply-pump bar: 5.30...5.90 pressure 1st speed 1/min: 400 Shutoff Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) electromagnet Volt: 12 1/min: 1500 4th speed Shutoff Supply-pump electromagnet volt: pressure bar: 6.60...7.20 Shutoff Idle delivery: electromagnet Volt: 12 1st speed 1/min: 460 Overlow quantity at overflow valve: Shutoff 1st speed 1/min: 600 Shutoff electromagnet Volt: 12 : 41.70...83.40 cm3/10s: (26.70...98.40) 1/min: 1500 Overflow quantity 2nd speed Shutoff electromagnet Volt: 12 Del, quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 : 55.50...138.80 Overflow cm3/10s: (40.50...153.80) quantity 3rd speed 1/min: 550 Shutoff Delivery-quant. and breakaway char.: electromagnet Volt: 12

```
Del. quantity cm3/: 2.00...8.00
             1000s.: (1.00...9.00)
Load-dependent start of delivery:
Inj.-dty.dif.measurement:
1st speed
              1/min: 1200
Inj. aty. cm3/ : 18.0...26.0 '
difference 1000s.: -
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel
                  : 0.80...1.00 '
difference
                 mm: -
Shutoff
electromagnet Volt: 12
Automatic starting fuel delivery:
1st speed
             1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 65.00...95.00
             1000s.: (65.00...95.00)
2nd speed
              1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...55.00
             1000s.: (35.00...55.00)
4th speed
             1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.00...100.00
             1000s.: (60.00...100.00)
Shutoff electromagnet:
Cut-in
min voltage
                 : 10.0
Rated voltage
                   : 12.0
Mounting and assembly dimensions:
Designation
K
                 mm: 3.2...3.4
KF
                 mm: 5.8...6.2
                 mm: 0.6...1.0
MS
                mm: 2.8
mm: 38.2 ←2
mm: 55.5 ←4.1
SVS max.
Ya
Yb
Remarks:
```

Note inst. in remarks column

: OPE Test scheet : 03.12.92 Edition : 09.07.92 replaces Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L297-1 Type number : 0 460 404 056

Customer Part-No. :

Customer-specific information Customer : OPEL

: 2,3 YDT Engine

Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: --(from BDC): -

Indicator setting

Piston stroke mm: 1.0 : D Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Charge press. hPa: 1000 Setting value mm: 2.70...3.10

AFB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed Charge press hPa: 1000

Setting value bar: 4.20...4.80

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1200 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 62.50...63.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/

1000s.: 40.50...41.50

11

KSB/AFB valve Volt: 12

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 290 Speed

Del. quantity cm3/

1000s.: 13.50...17.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2500 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 15.00...21.00

KSB/AFB

valve Volt: 12

C24

SHUTOTT	- KSB/AFB		
electromagnet Volt: 12	- valve	Volt:	10
etectionagnet vott. 12		voct:	12
	- Shutoff		
Start:	 electromagne 	+ Volt.	12
ora, c.	- Ecectionagne		
	- 5th speed	1/min:	1500
Speed 1/min: 100	 Charge press 	hPa•	1000
	chaige piess	. nra.	1000
Del. quantity cm3/: 57,059,0	- TD travel	mm:	5.506.10
mind 1000s.: -	_		(5.106.50)
		1189	(3.100.30)
KSB/AFB	- KSB/AFB		
Valve Volt: 12.0	- valve	Volt:	12
		volt:	12
Shutoff	- Shutoff		
electromagnet Volt: 12.0	 electromagne 	+ 11-1+.	13
erectioning let vott. 12.0			
	- 9th speed	1/min:	300
Load-dependent start of delivery:			
	 Charge press 		1000
<pre>Injqty.dif.measurement:</pre>	- TD travel	mm:	1.503.50 A
	•	THE :	(1.303.70)
Speed 1/min: 1000	- KSB/AFB		
Charge press hPa: -	- valve	Volt:	-
Inj.—qty. cm3/	- Shutoff		
difference 1000s.: + 22.024.0 #			â o
	- electromagne	t Volt:	12
KSB/AFB	- 10th speed	1/min.	800
valve Volt: 12	 Charge press 	. hPa:	1000
Shutoff	- TD travel		3.606,00 B
	- ID LIAVEL		
electromagnet Volt: 12	-	mm:	(3.006.60)
TD-travel dif.measurement	- KSB/AFB		10.10011.0100
correttore anticipo iniezione (SV)	- valve	Volt:	
1. Speed 1/min: 1000			
1. Speed 1/11/11. 1000	- Shutoff		
TD-travel	 electromagne 	t Volt:	12
difference mm: + 1.21.4 #	o to o trongre		, _
KSB/AFB	- Sunnty-numn	nrecelle	e characteristic
KSB/AFB	- Supply-pump	pressur	e characteristic
valve Volt: 12	- Supply-pump:	pressur	e characteristic
valve Volt: 12	•		
valve Volt: 12 Shutoff	- 1st speed	1/min:	2100
valve Volt: 12	- 1st speed	1/min:	
valve Volt: 12 Shutoff	- - 1st speed - Charge press	1/min:	2100
valve Volt: 12 Shutoff electromagnet Volt: 12	- - 1st speed - Charge press - Supply-pump	1/min: . hPa:	2100 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications	- - 1st speed - Charge press - Supply-pump	1/min: . hPa:	2100 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications	- 1st speed - Charge press - Supply-pump - pressure	1/min: . hPa:	2100
valve Volt: 12 Shutoff electromagnet Volt: 12	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB	1/min: . hPa: bar:	2100 1000 6.907.50
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB	1/min: . hPa: bar:	2100 1000 6.907.50
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve	1/min: . hPa:	2100 1000 6.907.50
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff	1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff	1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic:	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne	1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed	1/min: . hPa: bar: Volt: t Volt: 1/min:	2100 1000 6.907.50 12 12 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic:	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed	1/min: . hPa: bar: Volt: t Volt: 1/min:	2100 1000 6.907.50 12 12 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press	1/min: . hPa: bar: Volt: t Volt: 1/min:	2100 1000 6.907.50 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump	1/min: hPa: bar: Volt: t Volt: 1/min: hPa:	2100 1000 6.907.50 12 12 1000 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump	1/min: hPa: bar: Volt: t Volt: 1/min: hPa:	2100 1000 6.907.50 12 12 1000 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40)	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump - pressure	1/min: hPa: bar: Volt: t Volt: 1/min: hPa:	2100 1000 6.907.50 12 12 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB	1/min: hPa: bar: Volt: t Volt: 1/min: hPa:	2100 1000 6.907.50 12 12 1000 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB	1/min: hPa: bar: Volt: t Volt: 1/min: hPa: bar:	2100 1000 6.907.50 12 12 1000 1000 4.204.80
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve	1/min: hPa: bar: Volt: t Volt: 1/min: hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB	1/min: hPa: bar: Volt: t Volt: 1/min: hPa: bar:	2100 1000 6.907.50 12 12 1000 1000 4.204.80
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12 12 1000 1000 4.204.80
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: Volt:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000	- 1st speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff - electromagne - 2nd speed - Charge press - Supply-pump - pressure - KSB/AFB - valve - Shutoff	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: Volt:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne 3rd speed	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Grange press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Grange press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne 3rd speed Charge press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: t Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60)	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 3rd speed Charge press Supply-pump pressure Shutoff electromagne 3rd speed Charge press Supply-pump pressure	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: t Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne 3rd speed Charge press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: t Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Try Charge press Supply-pump pressure KSB/AFB Valve Shutoff Charge press Supply-pump pressure KSB/AFB KSB/AFB	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Grarge press Supply-pump pressure KSB/AFB valve Shutoff electromagne KSB/AFB valve Supply-pump pressure KSB/AFB	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: t Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Grarge press Supply-pump pressure KSB/AFB valve Shutoff electromagne KSB/AFB valve Supply-pump pressure KSB/AFB	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 2nd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 3rd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff Supply-pump pressure KSB/AFB Supply-pump pressure KSB/AFB Supply-pump pressure KSB/AFB valve Shutoff	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne The Shutoff Supply-pump pressure Supply-pump pressure KSB/AFB valve Shutoff electromagne KSB/AFB valve Shutoff electromagne KSB/AFB valve Shutoff electromagne	1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne The Shutoff Supply-pump pressure Supply-pump pressure KSB/AFB valve Shutoff electromagne KSB/AFB valve Shutoff electromagne KSB/AFB valve Shutoff electromagne	1/min: . hPa: bar: Volt:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 4th speed 1/min: 800	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Ashato Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne KSB/AFB valve Shutoff electromagne Ashato Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Ath speed	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . t Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Ath speed 1/min: 800 Charge press hPa: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Charge press Supply-pump pressure KSB/AFB colored Charge press Charge press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . t Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Ath speed 1/min: 800 Charge press hPa: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Charge press Supply-pump pressure KSB/AFB colored Charge press Charge press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . t Volt: 1/min:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Ath speed 1/min: 800 Charge press hPa: 1000 TD travel mm: 1.302.10	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 3rd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Ath speed Charge press Supply-pump	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12 12 12 800 1000
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Ath speed 1/min: 800 Charge press hPa: 1000	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Charge press Supply-pump pressure KSB/AFB colored Charge press Charge press	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12
Valve Volt: 12 Shutoff electromagnet Volt: 12 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 2nd speed 1/min: 2100 Charge press hPa: 1000 TD travel mm: 8.309.10 mm: (8.009.40) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 Charge press hPa: 1000 TD travel mm: 2.703.10 mm: (2.203.60) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Ath speed 1/min: 800 Charge press hPa: 1000 TD travel mm: 1.302.10	1st speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne 3rd speed Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Charge press Supply-pump pressure KSB/AFB valve Shutoff electromagne ASB/AFB valve Shutoff electromagne Ath speed Charge press Supply-pump	1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa: bar: Volt: 1/min: . hPa:	2100 1000 6.907.50 12 12 1000 1000 4.204.80 12 12 800 1000 3.704.30 12 12 12 800 1000

KSB/AFB	† Del. quantity cm3/: 35.0043.00
valve Volt: -	1000s.: (33.0045.00)
Shutoff	+ 9th speed 1/min: 2150
electromagnet Volt: 12	+ Charge press. hPa: 1000
cteet anagher vott. 12	
A1	+ KSB/AFB
Overlow quantity at overflow valve:	+ valve Volt: 12
	+ Shutoff
1st speed 1/min: 500	electromagnet Volt: 12
Charge press. hPa: -	Dol guantity cm7/: /0 80 52 20
KSB/AFB	+ Del. quantity cm3/: 49.8052.20
	+ 1000s.: (48.7053.30)
valve Volt: 12	+ 12th speed 1/min: 1200
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ KSB/AFB
Overflow : 41.7083.40	+ valve Volt: 12
quantity cm3/10s: (26.7098.40)	+ Shutoff
2nd speed 1/min: 2150	+ electromagnet Volt: 12
Charge press. hPa: 1000	+ Del. quyntity cm3/: 62.5063.50
KSB/AFB	+ 1000s.: (60.7065.30)
valve Volt: 12	+ 16th speed 1/min: 800
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ KSB solenoid-operated
Overflow : 55.60139.00	+ valve volt: 12
quantity cm3/10s: (40.60154.00)	+ Shutoff
quarterly (150) (55. (45.65154.66)	
6.1 2	+ electromagnet volt: 12
Delivery-quant. and breakaway char.:	+ Del. quantity cm3/: 60.563.5
	+ 17th speed 1/min: 800
	+ Charge press. hPa: -
1nd speed 1/min: 800*	+ KSB solenoid-operated
Charge-air pressure-setting	tyalve volt: 12.0
point hPa: 500	+ Shutoff
LDA-stroke mm: 6.5	+ electromagnet volt: 12.0
KSB/AFB	+ Del. quantity cm3/: 40.543.5
valve Volt: 12	1000H.: -
Shutoff	+ 18th speed 1/min: 500
electromagnet Volt: 12	+ KSB/AF3
Del. quantity cm3/: 55.5056.50	+ valve Volt: 12
100 0 \$.: (53.0059.00)	+ Shutoff
2nd speed 1/min: 2700	
	+ electromagnet Volt: 12
Charge press. hPa: 1000	† Del. quantity cm3/: 40.5041.50
KSB/AFB	+ 1000s : (38.7043.30)
valve Volt: 12	1
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	T riecii. Silutoff.
	T
Del. quantity cm3/: 0.001.50	+ Electr. shutoff:
1000s.: -	+
5th speed 1/min: 2500	+ 1st speed 1/min: 290
Charge press. hPa: 1000	
	† Del. quantity cm3/: 0.003.00
KSB/AFB	+ 1000s.: -
valve Volt: 12	+ Shutoff
Shutoff	+ electromagnet volt: -
electromagnet Volt: 12	
C C C C C C C C C C C C C C C C C C C	1 VSB/AFD
	+ KSB/AFB
Del. quantity cm3/: 15.0021.00	+ KSB/AFB + valve Volt: -
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00)	+ valve Volt: -
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300	+ valve Volt: -
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300	
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300 Charge press. hPa: 1000	t valve Volt: - Idle delivery:
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300 Charge press. hPa: 1000 KSB/AFB	valve Volt: - Idle delivery: 1st speed 1/min: 290
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300 Charge press. hPa: 1000 KSB/AFB valve Volt: 12	Valve Volt: - Idle delivery: 1st speed 1/min: 290 KSB/AFB
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300 Charge press. hPa: 1000 KSB/AFB valve Volt: 12 Shutoff	valve Volt: - Idle delivery: 1st speed 1/min: 290
Del. quantity cm3/: 15.0021.00 1000s.: (14.0022.00) 8th speed 1/min: 2300 Charge press. hPa: 1000 KSB/AFB valve Volt: 12	Valve Volt: - Idle delivery: 1st speed 1/min: 290 KSB/AFB

Del. quantity cm3/: 13.50...17.50 1000s.: (11.50...19.50) 1/min: 400 2nd speed cm3/: 3.0 1000s.: (3.0) 1/min: 380 Dispersion KSB/AFB valve Volt: 12 2nd speed Shutoff KSB/AFB electromagnet Volt: 12 valve Volt: 12 Del. quantity cm3/: 40.00...50.00 Shutoff 1000s.: (40.00...50.00) electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 3rd speed 1/min: 100 1000s.: (0.00...3.00) KSB/AFB 3rd speed 1/min: 320 valve Volt: 12 KSB/AFB Shutoff valve Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 57.00...59.00 Shutoff electromagnet Volt: 12 1000s.: (50.00...66.00) Del. quantity cm3/: 7.00...13.00 1000s.: (6.50...13.50) Shutoff electromagnet: Load-dependent start of delivery: Cut-in Inj.-aty.dif.measurement: min voltage : 10.0 Rated voltage : 12.0 1st speed 1/min: 1000 Charge press. hPa: -Inj.-qty. cm3/ : + 22,0..24,0# Mounting and assembly dimensions: difference 1000s.: (20.0...26.0) # Designation KSB/AFB Κ mm: 3.2...3.4 valve Volt: 12.0 mm: 5.6...6.0 KF Shutoff mm: 0.8...1.2 MS electromagnet Volt: 12.0 LDA stroke mm: 6.5 1/min: 1000 2nd speed mm: 37.9...39.9 Charge press. hPa: -Ini.-qty. cm3/: + 2.0...8.0 Yh mm: 39.2...44.8 difference 1000s.: -Remarks: KSB/AFB valve Volt: 12.0 Shutoff electromagnet Volt: 12.0 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 * Correction at adjusting nut (46) TD-travel : + 1.2...1.4 # difference mm: -KSB/AFB A = KSB adjustment point valve Volt: 12 B = KSB curve point Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 TD-travel : + 0.5...1.1 Automatic starting fuel delivery: 1st speed 1/min: 250 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.00...63.00 1000s.: (50.00...66.00)

Note inst. in remarks column

Test scheet Edition : 07.12.92 replaces : 14.04.92 Calibrating oil : ISO-4113

Injection pump : VE4/10F2050R364 Type number : 0 460 404 066

Customer Part-No. :

Customer-specific information Customer : SOFIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 4.50...5.10

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000

Del. quantity cm3/ 1000s.: 37.50...38.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Low-idle speed regulation

1/min: 375

Del. quantity cm3/

1000s.: 15.00...19.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2200

Del. quantity cm3/

1000s.: 14.00...21.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 70.00...100.00

1000s.: 70.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1000

Inj.-qty. cm3/

difference 1000s.: 18.50...19.50 #

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1000

Supply pump

pressure

difference bar: 0.10...0.30 #

Shutoff

electromagnet Volt: 12.0

Inspection pump test specifications Test specifications in parentheses

	├ Shutoff
Timing—device characteristic:	electromagnet Volt: 12 Del. quantity cm3/: 0.003.00
2nd speed 1/min: 1800 -	1000s.: (0.003.00)
TD travel mm: 7.308.10	5th speed 1/min: 2200
mm: (7.008.40)	Shutoff
Shutoff -	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 14.0020.00
3rd speed 1/min: 1000	1000s.: (13.0021.00)
TD travel mm: 3.103.50	8th speed 1/min: 2000
mm: (2.604.00)	├ Shutoff
Shutoff -	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 37.5038.50
4th speed 1/min: 600	1000s.: (36.0940.00)
TD travel mm: 0.801.60	12th speed 1/min: 1000
mm: (0.501.90) -	- Shutoff
Shutoff -	electromagnet Volt: 12
electromagnet Volt: 12	Del. quyntity cm3/: 35.538.5
5th speed 1/min: 2000 -	- 1000s.: (34.539.5)
TD travel mm: 8.209.00 -	15th speed 1/min: 600
mm: (7.909.30)	Shutoff
Shutoff -	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 33.0036.00
Consider arms more results of the	1000s.: (32.0037.00)
Supply-pump pressure characteristic:	17th speed 1/min: 500
1et en and 1/min. 2000	Shutoff
1st speed 1/min: 2000	electromagnet volt: 12
Supply-pump - pressure bar: 7.007.60 -	Del. quantity cm3/: 30.0037.00
pressure bar: 7.007.60 - Shutoff -	1000H.: (29.5037.50)
	March about 66.
electromagnet Volt: 12	Mech. shutoff:
electromagnet Volt: 12 2nd speed 1/min: 1000	+
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump	Mech. shutoff: Electr. shutoff:
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10	Electr. shutoff:
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff	Electr. shutoff: 1st speed 1/min: 375
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00)
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: -
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery:
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: -
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve:	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40)	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00)
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow quantity at 2 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465 Shutoff
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12 Overflow : 55.60139.00	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000S.: (0.002.00)
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000S.: (12.0022.00) Dispersion cm3/: 3.0 1000S.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000S.: (0.002.00) 3rd speed 1/min: 400
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12 Overflow : 55.60139.00	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000s.: (12.0022.00) Dispersion cm3/: 3.0 1000s.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000s.: (0.002.00) 3rd speed 1/min: 400 Shutoff
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000s.: (12.0022.00) Dispersion cm3/: 3.0 1000s.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000s.: (0.002.00) 3rd speed 1/min: 400 Shutoff electromagnet Volt: 12
electromagnet Volt: 12 2nd speed 1/min: 1000 Supply-pump pressure bar: 4.505.10 Shutoff electromagnet Volt: 12 3rd speed 1/min: 500 Supply-pump pressure bar: 3.504.10 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 2000 Shutoff electromagnet Volt: 12 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	Electr. shutoff: 1st speed 1/min: 375 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 375 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 15.0019.00 1000s.: (12.0022.00) Dispersion cm3/: 3.0 1000s.: (3.0) 2nd speed 1/min: 465 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.002.00 1000s.: (0.002.00) 3rd speed 1/min: 400 Shutoff

Load-dependent start of delivery: Inj.-qty.dif.measurement: 1st speed 1/min: 1000 Inj.-qty. cm3/ : 19.0...21.0 # Shutoff electromagnet Volt: 12 1/min: 1000 3rd speed cm3/: 18.0...24.0 ' Inj.-aty. difference 1000s.: (17.0...25.0) ' Shutoff electromagnet Volt: 12 1/min: 1000 4th speed cm3/: + 4.0...6.0 " Inj.-qty. difference 1000s.: -Shutoff electromagnet Volt: 12.0 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1000 TD-travel : 0.40...0.60 ' difference mm: -Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 TD-travel : 0.8...1.8 " Shutoff electromagnet Volt: 12.0 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1000 1st speed Supply pump-: 0.10...0.30 # pressure difference bar: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 48.00...68.00 1000s.: (48.00...68.00) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...37.00 1000s.: (27.00...37.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 70.00...100.00 1000s.: (70.00...100.00) Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: KF mm: 5.6...6.0
MS mm: 1.6...2.0
SVS max. mm: 1.9

Ya mm: 37.9...39.9 Yb mm: 40.9...46.5

Remarks:

:

002

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VMA Edition : 03.12.92 reolaces Calibrating oil : ISO-4113 Injection pump : VE4/10F2100L414 : 0 460 404 068 Type number Customer Part-No. : Customer-specific information Customer Engine : HR 425 CLI TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer : 45.00...46.00 Electronically Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder : 1 688 901 022 assembly Opening | Pressure bar: 130.00...133.00 Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Lenath mm: 450 Start of delivery Prestroke man: -(from BDC): -Injection-pump setting values Test specifications in parentheses Timing-device travel

1/min: 1000

Charge press. hPa: 1000 Setting value mm: 1.40...1.80

Setting value

electromagnet Volt: 12

Supply-pump pressure

Setting value bar: 4.20...4.80 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: Speed 1/min: 1500 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 65.50...66.50 Shutoff electromagnet Volt: 12 cm3/: 3.0Dispersion 1000s.: (3.0) Full-load del. w/out charge press.: 1/min: 700 Speed Del. quantity cm3/ 1000s.: 43.00...44.00 Shutoff electromagnet Volt: 12 Low-idle speed regulation Speed 1/min: 450 Del. quantity cm3/ 1000s.: 13.00...17.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0) Full-load speed regulation 1/min: 2300 Speed Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 40.00...46.00 Shutoff electromagnet Volt: 12.0 Start: 1/min: 100 Speed Del. quantity cm3/: 45.00...75.00 1000s.: 45.00 mind Shutoff electromagnet Volt: 12 Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1500 Speed hPa: 1000 Charge press Inj.-qty. cm3/difference 1000s.: 25.0...27.0 #

1/min: 1000

Charge press hPa: 1000

Speed

Shutoff

Shutoff	+	Shutoff	
electromagnet Volt:	12.0	electromagnet Volt:	12
SP press.—dif.measu		ecceromagnet voce.	16
pompa di mandata (F		Original and minimal days and	
		Overlow quantity at	overtiow valve:
1. Speed 1/min:			
Charge press hPa:	1000 +	1st speed 1/min:	
Sribbly brimb	+	Charge press. hPa:	1000
pressure	+	Shutoff	
difference bar:	0.100.30 #	electromagnet Volt:	12
Shutoff	1	Overflow :	
electromagnet Volt:	12.0	quantity cm3/10s:	(26.70 98.40)
attern amagnine voter	1	2nd speed 1/min:	
Inspection-pump tes	t enecifications	Charge press. hPa:	
Test specifications			1000
rest specifications	in parentneses +	Shutoff	45
+22	· · · · · · · · · · · · · · · · · · ·	electromagnet Volt:	
Timing-device chara	cteristic:	Overflow :	
	+	quantity cm3/10s:	(40.60154.00)
2nd speed 1/min:			
Charge press hPa:	1000 +	Delivery-quant. and	breakaway char.
TD travel mm:	3.404.20		
mm:	(3.104.50)		
Shutoff	13.10	1nd speed 1/min:	700+
electromagnet Volt:	12 T		
		Charge-air pressure	-setting
3rd speed 1/min:		point hPa:	-
	1000 +		7.1
TD travel mm:		Shutoff	
mm:	(0.902.30)	electromagnet Volt:	12
Shutoff	+	Del. quantity cm3/:	
electromagnet Volt:	12 1		(53.5058.50)
4th speed 1/min:		3rd speed 1/min:	
	1000		
	0.201.00	Charge press. hPa:	1000
		Shutoff	40
	(0.001.30)	electromagnet Volt:	
Shutoff	+	Del. quantity cm3/:	0.008.00
electromagnet Volt:			(0.008.00)
5th speed 1/min:		5th speed 1/min:	
Charge press. hPa:	1000 +	Charge press. hPa:	1000
TD travel mm:	6.106.90	Shutoff	
am:	(5.807.20)	electromagnet Volt:	12
Shutoff	1	Del. quantity cm3/:	
electromagnet Volt:	12		(39.0047.00)
cecti onagree vote.	' ² T		
Supply property	a abamastanistis. T	9th speed 1/min:	
Supply-pump pressure	e characteristic:	Charge press. hPa:	1000
a	1	Shutoff	
1st speed 1/min:		electromagnet Volt:	
Charge press. hPa:	1000 +	Del. quantity cm3/:	63.0066.00
Supply-pump	+	1000s.:	(61.5067.50)
pressure bar:	7.207.80	12th speed 1/min:	
Shutoff	1	Charge press. hPa:	
electromagnet Volt:	12	Shutoff	1000
2nd speed 1/min:			10
		electromagnet Volt:	
Charge press. hPa:	†	Del. quyntity cm3/:	
Supply-pump	t 22 t 22		(64.068.0)
	4.204.80	18th speed 1/min:	
Shutoff	- - -	Charge press. hPa:	
electromagnet Volt:	12 +	Shutoff	
3rd speed 1/min:		electromagnet Volt:	12
	1000	Del. quantity cm3/:	
Supply-pump	1		(41.0046.00)
	3.203.80	20th speed 1/min:	
TO THE PARTY OF TH	~ T	LUCIO DUCCEU ITIIITA.	1 L/L/

chuseff	1st speed 1/min: 1500
Shutoff	+ Supply pump-
electromagnet Volt: 12	+ pressure : 0.100.30 #
Del. quantity cm3/: 65.5068.50	+ difference bar: -
1000s.: (64.0070.00)	+ Shutoff
	+ electromagnet Volt: 12.0
Mech. shutoff:	1
	Part-load del.at 3rd injgty.
Electr. shutoff:	terza fermo della portata
trader i directi.	+ stop (EGR set)
1st speed 1/min: 450	
	+ scarico) (ARF)
Del. quantity cm3/: 0.003.00	+ gaz d'échappement-ARF)
1000\$.: (0.003.00)	+ Spacing mm: 12.0
Shutoff	+
electromagnet volt: -	+ 1st speed 1/min: 1000
	+ Charge press. hPa: 1000
Idle delivery:	+ Shutoff
	+ electromagnet Volt: 12
1st speed 1/min: 450	+ Del. quantity cm3/: 42.5044.50
Shutoff	1000s.: (41.0046.00)
electromagnet Volt: 12	19003.1 (41.0040.00)
Del. quantity cm3/: 13.0017.00	+ Automatic starting fuel delivery:
1000s.: (10.0020.00)	†
Dispersion cm3/: 3.0	1st speed 1/min: 400
1000s.: (3.0)	+ Shutoff
2nd speed 1/min: 600	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 45.0075.00
electromagnet Volt: 12	10008:: (45.0075.00)
Del. quantity cm3/: 0.005.00	10003 (43.0073.00)
10008:: (0.005.00)	Todamand 1/min 150
	† 2nd speed 1/min: 550
3rd speed 1/min: 500	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	+ Del. quantity cm3/: 25.0045.00
Del. quantity cm3/: 2.507.50	+ 1000s.: (25.0045.00)
1000s.: (2.008.00)	+
	+ 4th speed 1/min: 100
Load dependent start of delivery:	+ Shutoff
Injqty.dif.measurement:	+ electromagnet Volt: 12
ing: qeyrari measar emerte.	
2nd annual 1/min. 1500	Del. quantity cm3/: 45.0075.00
2nd speed 1/min: 1500	† 1000s.: (45.0075.00)
Charge press. hPa: 1000	†
Inj.—qty. cm3/: 25.027.0 #	+ Shutoff electromagnet:
difference 1000s.: -	+
Shutoff	+ Cut-in
electromagnet Volt: 12	+ min voltage : 10.0
4th speed 1/min: 1500	+ Rated voltage : 12.0
Charge press. hPa: 1000	Thates voteage . , 2.0
Inj.—qty. cm3/: 28.034.0 '	Mounting and accomply dimensions
difference 1000S.: -	+ Mounting and assembly dimensions:
	T
Shutoff	+ Designation
electromagnet Volt: 12	+ K mm: 3,23,4
2nd speed 1/min: 1500	+ KF mm: 5,25,6
Charge press. hPa: 1000	+ MS mm: 0,61,0
TD-travel : 0.500.70 '	+ LDA stroke mm: 7.1
difference mm: -	+ Ya mm: 38.840.8
Shutoff	+ Yb mm: 37.246.8
electromagnet Volt: 12	1 31.2 70.0
TOUR COMMENCE FOLE. IL	Ajustament Potentiamaten:
SP procedif managinament.	+ Ajustement Potentiometer:
SP press.—dif.measurement:	Ť
pompa di mandata (FP):	†

Supply voltage

pot. volt: 5.0

Output volt

pot. volt: 2.31

Remarks:

* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test scheet : OPE Edition : 03.12.92 : 13.02.91 replaces Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L297-4 Type number : 0 460 404 071

Customer Part-No. :

Customer-specific information

Customer : OPFL

: 2,3 DTR-MT Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Charge press. hPa: 1000

Setting value mm: 5.10...5.50

AFB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed Charge press hPa: 1000

Setting value bar: 5.40...6.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1200 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 62.50...63.50

KSB/AFB valve Volt: 12

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 40.50...41.50 11

KSB/AFB valve Volt: 12

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 290

Del. quantity cm3/

1000s.: 13.50...17.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2500 Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 15.00...21.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Charge press hPa: -	+ 5th speed 1/min: 1200
Del. quantity cm3/: 57.059.0	+ Charge press. hPa: 1000
mind 1000s.: 57.0	+ TD travel mm: 3.504.10
KSB/AFB	+ mm: (3.104.50)
Valve Volt: 12	→ KSB/AFB
Shutoff	+ valve Volt: 12
electromagnet Volt: 12	+ Shutoff
	+ electromagnet Volt: 12
Load-dependent start of delivery:	9th speed 1/min: 300
Injgty.dif.measurement:	
ing. qcy.drr.measurement.	Charge press. hPa: 1000
2-and 1/min 1500	TD travel mm: 1.503.50 A
Speed 1/min: 1500	+ mn: (1.303.70)
Charge press hPa: -	+ KSB/AFB
Injqty. cm3/	+ valve Volt: -
difference 1000S.: - 6.08.0 #	+ Shutoff
KSB/AFB	+ electromagnet Volt: 12
valve Volt: 12	10th speed 1/min: 800
Shutoff	Charge press hPa: 1000
electromagnet Volt: 12	TD travel mm: 3.505.90 B
SP pressdif.measurement	mm: (2.906.50)
pompa di mandata (FP)	+ KSB/AFB
1.Speed 1/min: 1500	+ valve Volt: -
Charge press hPa: -	+ Shutoff
Supply pump	electromagnet Volt: 12
pressure	†
difference bar: - 0.10.3 #	Supply-pump pressure characteristic
KSB/AFB	†
valve Volt: 12	+ 1st speed 1/min: 2100
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	- Supply-pump
	+ pressure bar: 6.907.50
Inspection-pump test specifications	+ KSB/AFB
Test specifications in parentheses	+ valve Volt: 12
· · · · · · · · · · · · · · · · · · ·	+ Shutoff
Timing-device characteristic:	electromagnet Volt: 12
Trining device endidates is the	2nd speed 1/min: 1500
2nd speed 1/min: 2100	
	Charge press. hPa: 1000
	+ Supply-pump
TD travel mm: 7.808.60	pressure bar: 5.406.00
nm: (7.503.90)	+ KSB/AFB
KSB/AFB	† valve Volt: 12
valve Volt: 12	+ Shutoff
Shutoff	+ electromagnet Volt: 12
electromagnet Volt: 12	1/min: 1200
3rd speed 1/min: 1500	Charge press. hPa: 1000
Charge press hPa: 1000	- Supply-pump
TD travel mm: 5.105.50	pressure bar: 4.605.20
mm: (4.606.00)	KSB/AFB
KSB/AFB	valve Volt: 12
valve Volt: 12	+ Shutoff
Shutoff	1
	electromagnet Volt: 12
electromagnet Volt: 12	+ 4th speed 1/min: 300
4th speed 1/min: 800	Charge press. hPa: 1000
Charge press hPa: 1000	+ Supply-pump
TD travel mm: 1.101.90	pressure bar: 4.204.80
mm: (0.802.20)	KSB/AFB
KSB/AFB	valve Volt: -
valve Volt: 12	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	1 Coot onagrace roter 12

Overlow quantity at overflow valve:	† Del. quantity cm3/: 50.3052.70
1et energy 1/min. 500	10005.: (49.2053.80)
1st speed 1/min: 500	12th speed 1/min: 1200
KSB/AFB	+ Charge press. hPa: 1000
valve Volt: 12	+ KSB/AFB
Shutoff	+ valve Volt: 12
electromagnet Volt: 12	+ Shutoff
Overflow : 41.7083.40	+ electromagnet Volt: 12
quantity cm3/10s: (26.7098.40)	+ Del. quyntity cm3/: 62.5063.50
2nd speed 1/min: 2150	+ 1000s.: (60.7065.30)
Charge press. hPa: 1000	+ 16th speed 1/min: 800
KSB/AFB	+ Charge press. hPa: 1000
valve Volt: 120	+ KSB solenoid-operated
Shutoff	+ valve volt: 12
electromagnet Volt: 12	+ Shutoff
Overflow : 55.60139.00	+ electromagnet volt: 12
quantity cm3/10s: (40.60154.00)	Del. quantity cm3/: 60.563.50
400010107	1000H.: -
Delivery-quant. and breakaway char.:	17th speed 1/min: 800
becively qualit. and bieakaway that	
	+ Charge press. hPa: -
1nd chood 1/nin 0004	+ KSB solenoid-operated
1nd speed 1/min: 800*	+ valve volt: 12
Charge-air pressure-setting	+ Shutoff
point hPa: 500	+ electromagnet volt: 12
KSB/AFB	+ Del. quantity cm3/: 40.543.5
valve Volt: 12	† 1000H.: -
Shutoff	+ 18th speed 1/min: 500
electromagnet Volt: 12	+ KSB/AFB
Del. quantity cm3/: 55.5056.50	+ valve Volt: 12
1000s.: (53.0059.00)	+ Shutoff
2nd speed 1/min: 2700	+ electromagnet Volt: 12
Charge press. hPa: 1000	Del. quantity cm3/: 40.5041.50
KSB/AFB	1000s.: (38.7043.30)
valve Volt: 12	100001. (001/01.140.00)
Shutoff	+ Mech. shutoff:
electromagnet Volt: 12	Theon. Shatorr.
Del. quantity cm3/: 0.003.00	Electr. shutoff:
1000s.: (0.003.00)	T Electi. Silutori.
5th speed 1/min: 2500	T 1st annual 1/min. 200
Charge press. hPa: 1000	1st speed 1/min: 290
	+ Del. quantity cm3/: 0.003.00
KSB/AFB	1000s.: (0.003.00)
valve Volt: 12	+ Shutoff
Shutoff	+ electromagnet volt: -
electromagnet Volt: 12	†
Del. quantity cm3/: 15.0021.00	† Idle delivery:
1000s.: (14.0022.00)	+
8th speed 1/min: 2300	† 1st speed 1/min: 290
Charge press. hPa: 1000	+ KSB/AFB
KSB/AFB	+ valve Volt: 12
valve Volt: 12	+ Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12	Del. quantity cm3/: 13.5017.50
Del. quantity cm3/: 34.0044.00	1000s.: (11.5019.50)
1000s.: -	Dispersion cm3/: 3.0
9th speed 1/min: 2150	10005.: (3.0)
Charge press. hPa: 1000	2nd speed 1/min: 380
KSB/AFB	+ KSB/AFB
valve Volt: 12	.
Shutoff	
ondtot!	
electromagnet Volt: 12	+ Shutoff + electromagnet Volt: 12

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 320 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...13.00 1000s.: (6.50...13.50) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1500 1st speed Inj.-qty. cm3/ : - 6.0...8.0 # difference 1000s.: -KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 1/min: 1500 2nd speed cm3/: -10.0..18,0'Inj.-qty. difference 1000s.: -KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1500 1st speed TD-travel : - 0.2...0.4 # mm: difference KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1500 Supply pump-: - 0.1...0.3 ' pressure difference bar: -KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 250 KSB/AFB valve Volt: 12

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 55.00...65.00 1000s.: (55.00...65.00) 2nd speed 1/min: 400 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...50.00 1000s.: (40.00...50.00) 1/min: 100 3rd speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 57.00...59.00 1000s.: (50.00...66.00) Mounting and assembly dimensions: Designation mm: 3.2...3.4 K KF mm: 5.6...6.0 mm: 0.9...1.3 MS mm: 6.5 LDA stroke mm: 20.5...22.5 Yb mm: 59.9...73.9 Remarks: * Correction at adjusting nut (46) Operate control lever after each manifold-pressure compensator pressure change.

Timing valve Volt: 12

Note inst. in remarks column

Test scheet : MAN Edition : 08.12.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-1 Type number : 0 460 404 072

Customer Part-No. :

Customer-specific information

Customer

Engine : D 0824 GF 02

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Opening

bar: 207.00...210.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.55

(from BDC): +-0.02(0.04)

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000

Setting value mm: 2.70...3.10

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 5.30...5.90

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 78.5...79.5

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.01000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 6.0 1000s.: (6.5)

Full-load speed regulation

1/min: 1420

Del. quantity cm3/ 1000s.: 59.50...65.50

Shutoff

electromagnet Volt: 24

Start:

Speed 1/min: 100 Del. quantity cm3/: 40.00...80.00

mind 1000s.: 40.00

Shutoff

electromagnet Volt: 24

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200

mm: 4.70...5.50 TD travel mm: (4,40,...5,80)

Shutoff

electromagnet Volt: 24 3rd speed 1/min: 1000

mm: 2.70...3.10 TD travel mm: (2.20...3.60)

Shutoff

electromagnet Volt: 24 4th speed 1/min: 800

TD travel mm: 0.30...1.10 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 78.50...81.50 1000s.: (77.00...83.00) mm: (0.00...1.40)Shutoff electromagnet Volt: 24
5th speed 1/min: 1350
TD travel mm: 5.30...6.10 1/min: 1000 12th speed Shutoff mn: (5.30...6.10)Shutoff electromagnet Volt: 24 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 24
Del. quantity cm3/: 74.00...80.00
1000s.: (73.00...81.00) 1/min: 600 1st speed Supply-pump pressure bar: 3.10...3.70 1/min: 600 20th speed Shutoff Shutoff electromagnet Volt: 24 2nd speed 1/min: 1000 electromagnet Voit: 24 Del. quantity cm3/: 53.00...59.00 1000s.: (52.00...60.00) Supply-pump bar: 5.30...5.90 pressure Shutoff Mech. shutoff: electromagnet Volt: 24 Mech. Abstellung: 1/min: 1350 3rd speed 1st speed 1/min: 1300 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Supply-pump bar: 7.50...8.10 pressure Shutoff electromagnet Volt: 24 Shutoff electromagnet volt: 24 Overlow quantity at overflow valve: Electr. shutoff: 1st speed 1/min: 600 Shutoff 1st speed 1/min: 300 electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 : 41.70...83.40 1000s.: (0.00...3.00) quantity cm3/10s: (26.70...98.40) Shutoff 2nd speed 1/min: 1350 electromagnet volt: -Shutoff electromagnet Volt: 24 Idle delivery: Overflow : 55.60...139.00 cm3/10s: (40.60...154.00) quantity 1st speed 1/min: 300 Shutoff electromagnet Volt: 24
Del. quantity cm3/: 7.00...13.00 Delivery-quant. and breakaway char .: 1000s.: (5.00...15.00) 1/min: 1530 cm3/: 6.0 3rd speed Dispersion Shutoff 1000s.: (6.5) electromagnet Volt: 24 1/min: 450 2nd speed Del. quantity cm3/: 0.00...15.00 Shutoff electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00) 1000s.: (0.00...15.00) 1/min: 1480 4th speed Shutoff electromagnet Volt: 24
Del. quantity cm3/: 15.00...45.00
1000S.: -Automatic starting fuel delivery: 1/min: 1420 5th speed 1/min: 350 1st speed Shutoff Shutoff electromagnet Volt: 24 Del. quantity cm3/: 55.00...105.00 1000S.: (55.00...105.00)

2nd speed 1/min: 500 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 40.00...80.00 1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

mir: voltage : 20.0 Rated voltage : 24.0

Mounting and assembly dimensions:

:

Designation

K mm: -

mm: 5.3...5.7 KF

MS mm: mm: 3.7 SVS max.

Remarks:

Note inst. in remarks column

Test scheet

Edition : 03.12.92 : 10.03.92 replaces Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L414-1 Type number : 0 460 404 073

Customer Part-No. :

Customer-specific information

Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Speed Charge press. hPa: 1000

Setting value mm: 1.20...1.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed hPa: 1000 Charge press

Setting value bar: 4.70...5.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 65.00...66.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

100**0**s.: 43.00...44.00

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300 Charge press hPa: 1000

Del. quantity cm3/

1000s.: 40.00...46.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 45.00...75.00

mind 1000s.: 45.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed Charge press hPa: 12 cm3/Inj.-aty.

difference 1000s.: - 7.00...9.00 #

Shutoff electromagnet Volt: 12	+ Shutoff
SP press.—dif.measurement	+ electromagnet Volt: 12 + Overflow : 41.7083.40
pompa di mandata (FP)	quantity cm3/10s: (26.7098.40)
1.Speed 1/min: 1500	+ 2nd speed 1/min: 2100
Supply pump	
pressure	+ Charge press. hPa: 1000 + Shutoff
difference bar: -0.100.30 #	•
Shutoff	
electromagnet Volt: 12	Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00
Ctecti Canageret Vott. 12	T quaritity this/fus: (40.60154.00
Inspection-pump test specificatio	ns — T Delivery-quant. and breakaway char.
Test specifications in parenthese	
	+
Timing-device characteristic:	+ 1nd speed 1/min: 700*
•	† Charge-air pressure-setting
2nd speed 1/min: 2100	point hPa: 350
Charge press hPa: 1000	∔ LDA-stroke mm: 7.0
TD travel mm: 7.508.30	→ Shutoff
mm: (7.208.60)	electromagnet Volt: 12
Shutoff	Del. quantity cm3/: 54.0055.00
electromagnet Volt: 12	+ 1000s.: (52.0057.00)
3rd speed 1/min: 1000	+ 3rd speed 1/min: 2500
Charge press hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 1.201.60	Shutoff
mm: (0.702.10)	electromagnet Volt: 12
Shutoff	
	+ Del. quantity cm3/: 0.008.00
electromagnet Volt: 12	+ 1000s.: (0.008.00)
6th speed 1/min: 1500	+ 5th speed 1/min: 2300
Charge press. hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 4.004.80	+ Shutoff
mm: (3.705.10)	+ electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 40.0046.00
electromagnet Volt: 12	† 1000s.: (39.0047.00)
	+ 9th speed 1/min: 2100
Supply-pump pressure characterist	ic: 🕂 Charge press. hPa: 1000
	+ Shutoff
1st speed 1/min: 2100	† electromagnet Volt: 12
Charge press. hPa: 1000	Del. quantity cm3/: 61.5064.50
Supply-pump	10005.: (60.0066.00)
pressure bar: 7.608.20	+ 12th speed 1/min: 1500
Shutoff	Charge press. hPa: 1000
electromagnet Volt: 12	+ Shutoff
2nd speed 1/min: 1000	electromagnet Volt: 12
Charge press. hPa: 1000	Del. quyntity cm3/: 65.0066.00
Supply-pump	10008:: (63.5067.50)
pressure bar: 4.705.30	18th speed 1/min: 700
Shutoff	
	+ Charge press. hPa: -
electromagnet Volt: 12 3rd speed 1/min: 700	+ Shutoff
	+ electromagnet Volt: 12
Charge press. hPa: 1000	+ Del. quantity cm3/: 43.0044.00
Supply-pump	1000\$.: (41.0046.00)
pressure bar: 3.804.40	+ 20th speed 1/min: 700
Shutoff	+ Charge press. hPa: 1000
electromagnet Volt: 12	+ Shutoff
A	+ electromagnet Volt: 12
Overlow quantity at overflow valve	e:
	† 1000s.: (63.5069.50)
1st speed 1/min: 700	+
Charge proce hPar 1000	Mach chutoff.

Electr. shutoff: 1st speed 1/min: 450 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 450 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 13.00...17.00 1000S:: (10.00...20.00) Dispersion cm3/: 3.0 1000S:: (3.0) 2nd speed 1/min: 600 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...5.00 1000s.: (0.00...5.00) 1/min: 500 3rd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 1.50...6.50 1000s.: (1.00...7.00) Load-dependent start of delivery: Inj.-aty.dif.measurement: 1st speed 1/min: 1500 Inj.-qty. cm3/ : - 13.0..19.0' difference 1000s.: -Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 : - 1.4...1.6 1 TD-travel difference mm: -Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12.0 Spacing 1st speed 1/min: 1000 Charge press. hPa: 1000 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.50...44.50 1000s.: (41.00...46.00)

Automatic starting fuel delivery: 1st speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 1000s.: (45.00...75.00) 2nd speed 1/min: 550 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00,...45.00 1000s.: (25.00...45.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 1000s.: (45.00...75.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 KF mm: 5.2...5.6 mm: 0.6...1.0 MS SVS max. mm: 4.3 LDA stroke mm: 7.0 Aiustement Potentiometer: Supply voltage volt: 5.0 pot. Output volt volt: 2.31 pot. Remarks: * Correction at adjusting nut (46) Operate control lever after each manifold-pressure compensator pressure change.

Note inst. in remarks column

Test scheet : MAN

: 03.12.92 : 09.12.92 Edition replaces Calibrating oil : ISO-4113

Injection pump : VE4/10F1350R418-2 : 0 460 404 076 Type number

Customer Part-No. :

Customer-specific information

Customer

: D 0824 GF 03 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 109 assembly

Opening

bar: 207.00...210.00 Pressure

Perforated-plate

mm: 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.2

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Setting value mm: 2.20...2.60

Shutoff

electromagnet Volt: 24

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 6.40...7.00

Shutoff

electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 78.00...79.00

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 300

Del. quantity cm3/

1000s.: 7.00...13.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 3.5 1000s.: (3.5)

Full-load speed regulation

1/min: 1420

Del. quantity cm3/

1000s.: 58.00...62.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100

Del. quantity cm3/: 64.00...66.00 mind 1000s.: 57.0

Shutoff

electromagnet Volt: 24

Inspection pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200

TD travel mm: 4.30...5.10

mm: (4.00...5.40)

Shutoff

electromagnet Volt: 24 3rd speed 1/min: 1000

mm: 2.20...2.60 TD travel mm: (1.70...3.10)

Shutoff

electromagnet Volt: 24 4th speed 1/min: 900

TD travel mm: 1.00...1.80 Shutoff mm: (0.70...2.10) electromagnet Volt: 24 Del. quantity cm3/: 58.00...62.00 1000s.: (53.50...66.50) 9th speed 1/min: 1350 Shutoff electromagnet Volt: 24 1/min: 1350 5th speed mm: 6.00...6.80 TD travel Shutoff electromagnet Volt: 24 Del. quantity cm3/: 77.70...80.70 mm: -Shutoff electromagnet Volt: 24 1000s.: (76.20...82.20) 1/min: 1000 12th speed Supply-pump pressure characteristic: Shutoff electromagnet Volt: 24 Del. quyntity cm3/: 78.00...79.00 1/min: 600 1st speed 1000s.: (76,00...81.00) 1/min: 800 Supply-pump pressure bar: 4.40...5.00 15th speed Shutoff Shutoff electromagnet Volt: 24 2nd speed 1/min: 1000 electromagnet Volt: 24 Del. quantity cm3/: 79.00...83.00 Supply-pump 1000s.: (77.50...84.50) bar: 6.40...7.00 pressure 20th speed 1/min: 600 Shutoff Shutoff electromagnet Volt: 24 electromagnet Volt: 24 1/min: 1200 3rd speed Del. quantity cm3/: 65.00...71.00 Supply-pump 1000s.: (64.00...72.00) pressure bar: 7.40...8.00 Shutoff Mech. shutoff: electromagnet Volt: 24 Mech. Abstellung: Overlow quantity at overflow valve: 1st speed 1/min: 1350 Del. quantity cm3/: 0.00...3.00 1st speed 1/min: 600 1000s.: (0.00...3.00) Shutoff Shutoff electromagnet Volt: 24 electromagnet volt: 24 : 41.70...83.40 cm3/10s: (26.70...98.40) quantity Electr. shutoff: 2nd speed 1/min: 1350 1st speed 1/min: 300 Del. quantity cm3/: 0.00...3.00 Shutoff electromagnet Volt: 24 : 55.60...139.00 Overflow 1000s.: (0.00...3.00) quantity cm3/10s: (55.60...139.00) Shutoff electromagnet volt: -Delivery-quant. and breakaway char.: Idle delivery: 1/min: 1550 2nd speed 1/min: 300 1st speed Shutoff Shutoff electromagnet Volt: 24

Del. quantity cm3/: 7.00...13.00

1000s.: (4.50...15.50)

Dispersion cm3/: 3.5 electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) 3rd speed 1/min: 1510 Shutoff 1000s.: (3.5) 1/min: 450 electromagnet Volt: 24 Del. quantity cm3/: 0.00...15.00 1000s.: (0.00...15.00) 2nd speed Shutoff electromagnet Volt: 24 1/min: 1460 4th speed Del. quantity cm3/: 0.00...3.00 Shutoff 1000s.: (0.00...3.00) electromagnet Volt: 24 Del. quantity cm3/: 15.00...45.00 Automatic starting fuel delivery: 1000s.: (15.00...45.00) 1/min: 1420 5th speed 1st speed 1/min: 350

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00)

2nd speed 1/min: 450

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 40.00...70.00 1000s.: (40.00...70.00)

3rd speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 54.00...66.09 1000s.: MAX.57.0

Shutoff electromagnet:

Cut-in

: 20.0 : 24.0 min voltage

Rated voltage

Mounting and assembly dimensions:

Designation

Κ mm: -

mm: 5.0...5.4 mm: 0.8 KF

MS

Remarks:

Note inst. in remarks column

Test scheet : FIA Edition : 09.12.92 replaces : 14.04.92 Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407 Type number : 0 460 424 075

Customer Part-No. :

Customer-specific information Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temo.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

Pressure bar: 250.00...253.00

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1000 Charge press. hPa: 1000 Setting value mm: 1.40...1.80

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000 Charge press hPa: 1000

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 24

Full-load del. with charge press.:

1/min: 700 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 79.00...80.00

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 3.5 100C\$.: (5.0)

Full-load del. w/out charge press.:

1/min: 600

Del. quantity cm3/

1000s.: 45.50...46.50

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350

Del. quantity cm3/ 1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 3.5 1000s.: (5.0)

Full-load speed regulation

Speed 1/min: 1525 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 30.00...36.00

Shutoff

electromagnet Volt: 24

Start:

1/min: 100

Del. quantity cm3/: 60.00...110.00 mind 1000s.: 60.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	Charge-air pressure-setting
2-1	point hPa: 375
2nd speed 1/min: 1100 +	LDA-stroke mm: 6,7
Charge press hPa: 1000	Shutoff
TD travel mm: 2.203.00	electromagnet Volt: 24
mm: (1.703.50)	Del. quantity cm3/: 64.0065.00
Shutoff	10008.: (60.5068.50)
electromagnet Volt: 24	2nd speed 1/min: 1600
3rd speed 1/min: 1000 +	Charge press. hPa: 1000
Charge press hPa: 1000 +	Snutoff
TD travel mm: 1.401.80	electromagnet Volt: 24
mm: (0.702.50)	Del. quantity cm3/: 0.003.00
5th speed 1/min: 1350	10008.: (0.003.00)
Charge press. hPa: 1000	5th speed 1/min: 1525
TD travel mm: 3.704.50	Charge press. hPa: 1000
mm: (3.205.00)	Shutoff
Shutoff	*****
	electromagnet Volt: 24
electromagnet Volt: 24	Del. quantity cm3/: 30.0036.00
	1000\$.: (27.0039.00)
Supply-pump pressure characteristic:	8th speed 1/min: 1475
+	Charge press. hPa: 1000
1st speed 1/min: 600	Shutoff
Charge press. hPa: 1000	electromagnet Volt: 24
Supply-pump +	Del. quantity cm3/: 43.0051.00
pressure bar: 3.704.30	10008.: (41.0053.00)
Shutoff	9th speed 1/min: 1350
electromagnet Volt: 24	Charge press. hPa: 1000
2nd speed 1/min: 1000	Shutoff
Charge press. hPa: 1000	electromagnet Volt: 24
Supply-pump	
pressure bar: 5.706.30	Del. quantity cm3/: 69.5072.50
Shutoff	10008.: (67.5074.50)
	10th speed 1/min: 1200
electromagnet Volt: 24	Charge press. hPa: 1000
3rd speed 1/min: 1350	Shutoff
Charge press. hPa: 1000	electromagnet Volt: 24
Supply-pump +	Del quantity cm3/: 72.0076.00
pressure bar: 7.508.10	1000s.: (70.5077.50)
Shutoff	12th speed 1/min: 700
electromagnet Volt: 24	Charge press. hPa: 1000
 	Shutoff
Overlow quantity at overflow valve:	electromagnet Volt: 24
1	Del. quyntity cm3/: 79.0080.00
1st speed 1/min: 600	2001 407110107 17100101
Charge press. hPa: 1000	10005 + (76.00 83.00)
	1000s.: (76.0083.00)
	18th speed 1/min: 600
Shutoff	18th speed
Shutoff electromagnet Volt: 24	18th speed
Shutoff electromagnet Volt: 24 Overflow: 41.7083.40	18th speed 1/min: 600 Charge press. hPa: – Shutoff electromagnet Volt: 24
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40)	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50)
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000	18th speed 1/min: 600 Charge press. hPa: - Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000s.: (42.5049.50) 20th speed 1/min: 600
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff	18th speed 1/min: 600 Charge press. hPa: - Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000S.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 82.5086.50 1000S.: (81.0088.00)
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000s.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 82.5086.50 1000s.: (81.0088.00) 21th speed 1/min: 500
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000s.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 82.5086.50 1000s.: (81.0088.00) 21th speed 1/min: 500 Charge press. hPa: —
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00) Delivery-quant. and breakaway char.:	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50
Shutoff electromagnet Volt: 24 Overflow : 41.7083.40 quantity cm3/10s: (26.7098.40) 2nd speed 1/min: 1350 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Overflow : 55.60139.00 quantity cm3/10s: (40.60154.00)	18th speed 1/min: 600 Charge press. hPa: — Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.5046.50 1000s.: (42.5049.50) 20th speed 1/min: 600 Charge press. hPa: 1000 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 82.5086.50 1000s.: (81.0088.00) 21th speed 1/min: 500 Charge press. hPa: —

Del. quantity cm3/: 44.00...48.00 1000s.: (42.00...50.00) Mech. shutaff: Mech. Abstellung: 1/min: 1350 1st speed Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: -Shutoff electromagnet volt: 24 Electr. shutoff: 1st speed 1/min: 350 Del. quantity cm3/: 0.00...3.00 1000s.: -Shutoff electromagnet volt: -Idle delivery: 1st speed 1/min: 350 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 13.00...17.00 1000s.: (10.00...20.00) cm3/: 3.5 Dispersion 1000s.: (5.0) 2nd speed 1/min: 475 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: 1st speed 1/min: 130 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) 2nd speed 1/min: 250 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 45.00...65.00 1000s.: (45.00...65.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 60.00...110.00 1000s.: (60.00...110.00) Shutoff electromagnet:

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: 3,7 KF mm: K-OT MS mm: 0,7...1,1 LDA stroke mm: 6,7

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

D22

Cut-in

min voltage

: 20.0

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : MAN Edition : 09.12.92 : 09.11.88 replaces Calibrating oil : ISO 4113 Injection pump : VE6/12F1300R307 Type number : 0 460 426 112 Customer—specific information Customer : MAN : D0826TF Engine TEST BENCH REQUIREMENTS Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar : 0.30...0.40 Calibrating nozzle-holder : 1 688 901 020 assembly Opening Pressure bar: 172...175 Perforated-plate diameter mm: 0.6 Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840 Start of delivery Prestroke mm: 0.2 $(from BDC): \leftarrow 0.02(0.04)$ Indicator setting Piston stroke mm: 1.0 Outlet. Injection-pump setting values Test specifications in parentheses

Supply-pump pressure Speed 1/mir:: 1000 Charge press hPa: 1000 Setting value bar: 8.1...8.7 Full-load del. with charge press.: 1/min: 1000 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 120.5...121.5 Dispersion cm3/: 4.0 1000s.: (4.5) Full-load del. w/out charge press.: 1/min: 600 Speed Del. quantity cm3/ 1000s.: 88.5...89.5 Low-idle speed regulation Speed 1/min: 300 Del. quantity cm3/ 1000s.: 26.0...34.0 Del. quantity cm3/: 3.5 1000s.: (4.5) full-load speed regulation Speed 1/min: 1350 Charge press hPa: 1000 Del. quantity cm3/ 1090s.: 107.0...113.0 Start: Speed 1/min: 100 Charge press hPa: -Del. quantity cm3/: -1000s.: 70.0 mind Load-dependent start of delivery: Inj.-qty.dif.measurement: Speed 1/min: 1000 Charge press hPa: 1000 Inj.-qty. cm3/difference 1000s.: - 11.0...13.0 # SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1000 Charge press hPa: 1000 Supply pump pressure difference bar: - 0.1...0.3 # Inspection-pump test specifications

Speed

Timing-device travel

1/min: 1000

Charge press. hPa: 1000 Setting value mm: 2.8...3.2

Test specifications in parentheses	+ 4th speed 1/min: 1430
	+ Charge press. hPa: 1000
Timing-device characteristic:	+ Del. quantity cm3/: 15.055.00
	† 1000s.: -
1st speed 1/min: 1000	+ 5th speed 1/min: 1350
Charge press hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 2.83.2	+ Del. quantity cm3/: 107.0113.0
mn: (2.33.7)	1000s.: (105.5114.5)
2nd speed 1/min: 1100	- 6th speed 1/min: 1300
Charge press hPa: 1000	+ Charge press. hPa: 1000
TD travel mm: 3.54.3	Pel. quantity cm3/: 116.5121.5
mm: (3.24.6)	10005.: (115.0123.0)
3rd speed 1/min: 900	7th speed 1/min; 1000
Charge press hPa: 1000	Charge press. hPa: 1000
TD travel mm: 1.52.3	Del. quantity cm3/: 120.5121.5
mm: (1.22.6)	1000s.: (118.5123.5)
***************************************	# 8th speed 1/min: 800
Supply-pump pressure characteristic:	Charge press. hPa: 1000
bashty bash bi cosaic character iscit.	Del. quantity cm3/: 120.5125.5
1st speed 1/min: 600	1000S.: (119.0127.0)
Charge press. hPa: 1000	
	9th speed 1/min: 600
Supply-pump pressure bar: 5.86.4	Charge press. hPa: 1000
2nd speed 1/min: 1000	Del. quantity cm3/: 118.5127.6
	† 1000s.: (117.0129.0)
Charge press. hPa: 1000	† 10th speed 1/min: 600
Supply-pump	+ Charge press. hPa: -
pressure bar: 8.18.7	+ Del. quantity cm3/: 88.589.5
3rd speed 1/min: 1100	† 1000s.: (86.591.5)
Charge press. hPa: 1000	† \
Supply-pump	<pre># Mech. shutoff:</pre>
pressure bar: 8.59.1	+ Mech. Abstellung:
	†
Overlow quantity at overflow valve:	+ 1st speed 1/min: 1300
A . 1	+ Charge press. hPa: 1000
1st speed 1/min: 600	+ Del. quantity cm3/: 0.003.00
Charge press. hPa: -	
Overflow : 4183	+
quantity cm3/10s: (2698)	+ Idle delivery:
2nd speed 1/min: 1300	+
Charge press. hPa: 1000	1st speed 1/min: 300
Overflow : 55138	→ Del. quantity cm3/: 26.533.5
quantity cm3/10s: (40153)	1000s.: (24.535.5)
	2nd speed 1/min: 400
Delivery-quant. and breakaway char.:	- Del. quantity cm3/: 0.003.00
• • •	1000s.: -
	3rd speed 1/min: 350
1nd speed 1/min: 600*	Del. quantity cm3/: 3.0012.00
Charge-air pressure-setting	10008.: (1.5013.5)
point hPa: 300	1
LDA-stroke mm: 7.6	Load-dependent start of delivery:
Del. quantity cm3/: 104.5105.5	Inj.—qty.dif.measurement:
1000s.: (102.5107.5)	1 Inj. 907.477.medsurement.
2nd speed 1/min: 1520	1st speed 1/min: 1000
Charge press. hPa: 1000	Charge press. hPa: 1000
Del. quantity cm3/: 0.003.0	Time $\frac{1}{2}$ Inj. $\frac{1}{2}$ ety. cm3/ : - 39.547.5'
10005.: -	difference 1000s.: -
3rd speed 1/min: 1480	
Charge press. hPa: 1000	- 2nd speed 1/min: 1000
	Charge press. hPa: 1000
Del. quantity cm3/: 0.0015.0 1000S.: -	Injqty. cm3/: + 2.08.0 "
10003.; ~	+ difference 1000s.: -

TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1000 1st speed Charge press. hPa: 1000 TD-travel : - 0.8...1.0 ' difference mm: -2nd speed 1/min: 1000 Charge press. hPa: 1000 TD-travel : + 0.1...0.9 " difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 100 Del. quantity cm3/: 70.00...130.00 10005.: -

2nd speed 1/min: 350 Del. quantity cm3/: 55.00...95.00 1000s.: -

3rd speed 1/min: 450
Del. quantity cm3/: 95.0...135.0
10005.: -

Mounting and assembly dimensions:

Designation

K mm: MS mm: 0.6...1.0
SVS max. mm: 0.6
LDA stroke mm: 7.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Note inst. in remarks column

Test scheet

: REN

Edition

: 03.12.92

replaces

Calibrating oil

: ISO-4113

Injection pump

: VE4/8F2300R458

Type number

: 0 460 484 048

Customer Part-No. :

Customer-specific information

Customer

: RENAULT

Engine

: $F\bar{8}\bar{Q} - 730$

TEST BENCH REQUIREMENTS

Calibrating-oil

return temp.

with thermometer : 40.00...48.00

Electronically: 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 688 901 022

Opening .

Pressure

bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00

x Length

mm: 450

Start of delivery

Prestroke

mn: -

(from BDC): -

Injection pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250 Setting value mm: 3.20...3.60

AFB/AFB

valve

Volt: -

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 4.40...5.00

KSB/AFB

valve

Volt: -

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed

1/min: 1250

Del. quantity cm3/

1000s.: 31.6...32.6

KSB/AFB

11

valve

Volt: -

Shutoff

electromagnet Volt: 12

Dispersion

cm3/: 2,5

1000s.: (3,0)

Low-idle speed regulation

1/min: 410 Speed

Del. quantity cm3/

1000s.: 7.5...11.5

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 2,5

1000s.: (2,5)

Residual-Delivery Setting

1/min: 500

Del. quantity cm3/ 1**000**s.: 1.00...5.00

Volt: -

valve Shutoff

KSB/AFB

electromagnet Volt: 12

Full-load speed regulation

Speed

1/min: 2450

Del. quantity cm3/

1000s.: 25.50...31.50

KSB/AFB

Volt: valve

Shutoff

electromagnet Volt: 12

Start:

Speed

1/min: 100

Del. quantity cm3/: 40.00...70.00

1000s.: 40.00 mind

KSB/AFB

Valve

Volt: -

026

Shutoff	+ KSB/AFB
electromagnet Volt: 12	+ valve Volt: 12
	+ Shutoff
Load-dependent start of delivery:	- electromagnet Volt: 12
Injqty.dif.measurement:	+
	+ Supply-pump pressure characteristic:
Speed 1/min: 1250	+
Injqty. cm3/	1st speed 1/min: 750
difference 1000s.: -10.512.5 #	+ Supply-pump
KSB/AFB	+ pressure bar: 3.103.70
valve Volt: -	+ KSB/AFB
Shutoff	+ valve Volt: -
electromagnet Volt: 12	+ Shutoff
SP press.—dif.measurement	+ electromagnet Volt: 12
pompa di mandata (FP)	+ 2nd speed 1/min: 1250
1. Speed 1/min: 1250	+ Supply-pump
Supply pump	+ pressure bar: 4.405.00
pressure	+ KSB/AFB
difference bar: - 0.10.3 #	+ valve Volt: -
KSB/AFB	+ Shutoff
valve Volt: -	+ electromagnet Volt: 12
Shutoff	+ 3rd speed 1/min: 2000
electromagnet Volt: 12	+ Supply-pump
coor, and race, in	+ pressure bar: 6.306.90
Inspection-pump test specifications	- KSB/AFB
Test specifications in parentheses	+ valve Volt: -
rese specificacions in parentheses	Shutoff
Timing-device characteristic:	
rining device characteristic.	+ electromagnet Volt: 12
2nd speed 1/min: 2000	T Overland months to the second
	f Overlow quantity at overflow valve:
	† 4 · · · · · · · · · · · · · · · · · ·
mm: (5.506.90)	1 1st speed 1/min: 750
KSB/AFB	+ KSB/AFB
valve Volt: -	t valve Volt: -
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
3rd speed 1/min: 1250	+ Overflow : 41.7083.40 + quantity cm3/10s: (26.7098.40)
TD travel mm: 3.203.60	+ quantity cm3/10s: (26.7098.40)
mm: (2.704.10)	+ 2nd speed 1/min: 2250
KSB/AFB	+ KSB/AFB
valve Volt: -	+ valve Volt: -
Shutoff	+ Shutoff
electromagnet Volt: 12	+ electromagnet Volt: 12
4th speed 1/min: 750	+ Overflow : 55.60139.00
TD travel mm: 1.101.90	+ quantity cm3/10s: (40.60154.00)
mm: (0.802.20)	+
KSB/AFB	+ Delivery-quant. and breakaway char.:
valve Volt: -	+
Shutoff	+
electromagnet Volt: 12	+ 2nd speed 1/min: 2950
8th speed 1/min: 310	+ KSB/AFB
TD travel mm: 1.003.20 A	+ valve Volt: -
mm: —	+ Shutoff
KSB/AFB	+ electromagnet Volt: 12
valve Volt: 12	Del. quantity cm3/: 0.005.00
Shutoff	10008.: (0.005.00)
electromagnet Volt: 12	3rd speed 1/min: 2650
9th speed 1/min: 500	+ KSB/AFB
TD travel mm: 2.204.60 B	+ valve Volt: -
mm: -	VULL
11811.	T

Shutoff		+	
electromagnet Volt:	12	+	LFG-setting:
Del. quantity cm3/:	10.5018.50	+	solidale con carcassa:
	(9.5019.50)	+	Idle delivery:
5th speed 1/min:	2450	+	•
KSB/AFB		+	1st speed 1/min: 410
valve Volt:	-	+	KSB/AFB
Shutoff		+	valve Volt: -
electromagnet Voit:	12	+	Shutoff
Del. quantity cm3/:		+	electromagnet Volt: 12
	(24.5032.50)	+	Del. quantity cm3/: 7.5011.50
9th speed 1/min:	2250	+	1000s.: (5.5013.50)
KSB/AFB		+	
valve Volt:		+	High Idle:
Shutoff	40	+	
electromagnet Volt:		+	1st speed 1/mi: 500
Del. quantity cm3/:	33.0035.00	+	KSB/AFB
	(31.7036.30)	+	valve Volt: -
10th speed 1/min:	2000	†	Shutoff
KSB/AFB		+	electromagnet Volt: 12
valve Volt:	-	+	Del. quantity cm3/: 7.0011.00
Shutoff		+	1000s.: (5.0013.00)
electromagnet Volt:		+	• •
Del. quantity cm3/:		+	Residual:
	(31.2035.30)	+	
11th speed 1/min:	1625	+	1.Rotacao 1/min: 500
KSB/AFB		+	KSB/AFB
valve Volt:		+	valve Volt: -
Shutoff		+	Shutoff
electromagnet Volt:	12	+	electromagnet Volt: 12
Del. quantity cm3/:		+	Del. quantity cm3/: 1.005.00
	(29.3033.90)	+	1000s.: (1.005.00)
12th speed 1/min:	1250	+	
KSB/AFB		+	Load-dependent start of delivery:
valve Volt:	-	+	Injqty.dif.measurement:
Shutoff		+	
electromagnet Volt:		+	1st speed
Del. quyntity cm3/:	31.6032.60	+	Injqty. cm3/ : - 13.217.2'
1000s.:	(29.8034.40)	+	difference 1000s.: -
20th speed 1/min:	750	+	KSB/AFB
KSB/AFB		+	valve Volt: -
valve Volt:	-	+	Shutoff
Shutoff		+	electromagnet Volt: 12
electromagnet Volt:		†	3rd speed 1/min: 1250
Del. quantity cm3/:		+	Injqty. $cm3/: + 2.008.00''$
1000s.:	(29.4034.00)	+	difference 1000s.: -
		+	KSB/AFB
Mech. shutoff:		+	valve Volt: -
		+	Shutoff
Electr. shutoff:		+	electromagnet Volt: 12
		+	
1st speed 1/min:		+	TD-travel dif.measurement:
Del. quantity cm3/:		†	correttore anticipo iniezione (SV)
	MAX.5.0 STREU.	†	1st speed 1/min: 1250
Shutoff		+	TD-travel : - 0.40.6 '
electromagnet volt:	-	+	difference mm: -
KSB/AFB		+	KSB/AFB
valve Volt:	-	†	valve Volt: -
		†	Shutoff
Damper set qty.:		+	electromagnet Volt: 12

```
2nd speed
             1/min: 1250
TD-travel
                 : ~ 0.2...0.8 "
difference
                 mm: -
KSB/AFB
valve
               Volt: -
Shutoff
electromagnet Volt: 12
Automatic starting fuel delivery:
1st speed
              1/min: 210
KSB/AFB
valve
               Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...70.00
            1000s.: (40.00...70.00)
2nd speed
             1/min: 310
KSB/AFB
valve
               Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...45.00
            1000s.: (15.00...45.00)
             1/min: 100
4th speed
KSB/AFB
              Volt: -
valve
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 40.00...70.00
             1000s.: (40.00...70.00)
Shutoff electromagnet:
Cut-in
min voltage
                   : 10.0
Rated voltage
                   : 12.0
Mounting and assembly dimensions:
Designation
                 mm: 3.2...3.4
K
KF
                 mm: 5.5
                 mm: 1.2..,1.4
MS
SVS max.
                 mm: 1.5
Remarks:
                   :
                   :
A = KSB adjustment point
B = KSB curve point
```

Note inst. in remarks column

: FIA 1,9 K2 Test scheet Edition : 09.12.92

replaces : 06.12.91 Calibrating oil : ISO 4113

Injection pump : VE4/8F2300R464 Type number : 0 460 484 052

Customer-specific information

: FIAT TIPO/TEMPRA Customer

Engine : M 705

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500 Setting value mm: 5,9...6,3

Shutoff electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed Setting value bar: 5,6...6,2 Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500

Del. quantity cm3/

1000s.: 32.00...33.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2,5 1000s.: -

Low-idle speed regulation

1/min: 450 Del. quantity cm3/

1000s.: 8,0...12,0

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: -

Full-load speed regulation

1/min: 2500 Speed

Del. quantity cm3/

1000s.: 20,0...26,0

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed Del. quantity cm3/: -1000s.: 37.0 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

Inj.-qty. cm3/

difference 1000s.: - 6,0...8.00 #

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1.Speed 1/min: 1500

Supply pump pressure

difference bar: - 0.1...0.3 #

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing device characteristic:

E02

		+	Zna speed 1/min: 265U
1st speed 1/min:		+	Shutoff
TD travel mm:	1,72,5	+	electromagnet Volt: 12
	(1,42,8)	1	Del. quantity cm3/: 2,010,0
electromagnet Volt:	10		
	4500	T	1000s.: -
2nd speed 1/min:		+	3rd speed 1/min: 2500
TD travel mm:	5,96,3	1	Shutoff
	(5,46,8)	1	electromagnet Volt: 12
Shutoff	(2)40/0/	T	
		+	Del. quantity cm3/: 20,026,0
electromagnet Volt:	12	+	1000s.: (19,027,0)
3rd speed 1/min:	2000	1	4th speed 1/min: 2300
	8,69,4	L	Shutoff
		T	
	(8,39,7)	十	electromagnet Volt: 12
Shutoff		+	Del. quantity cm3/: 32,835,2
electromagnet Volt:	12	1	1000\$.: (31,736,3)
4th speed 1/min:		1	5th speed 1/min: 2000
		T	
	9,410,2	+	Shutoff
mn:	(9,110,5)	+	electromagnet Volt: 12
Shutoff	•	1	Del. quantity cm3/: 32,334,7
	10		
electromagnet Volt:	12	+	1000\$.: (31,235,8)
		+	6th speed 1/min: 1500
Supply-pump pressur	e characteristic:	+	Shutoff
atition and the second		1	electromagnet Volt: 12
1 at anged 1/	700	T	
1st speed 1/min:	000	+	Del. quantity cm3/: 32,033,0
Supply-pump		+	1000s.: (30,234,8)
pressure bar:	3.03,6	1	7th speed 1/min: 600
Shutoff	3.23/3	1	
	(3	T	Shutoff
electromagnet Volt:		+	electromagnet Volt: 12
2nd speed 1/min:	1500	1	Del. quantity cm3/: 33,036,0
Stropiv-numo		1	
Supply-pump	5 4 4 2	+	1000s.: (31.537,5)
pressure bar:	5,66,2	+	1000s.: (31.537,5)
pressure bar: Shutoff		+	
pressure bar: Shutoff		+++++++++++++++++++++++++++++++++++++++	1000s.: (31.537,5)
pressure bar: Shutoff electromagnet Volt:	12	+ + + + + + + + + + + + + + + + + + + +	1000S.: (31.537,5) Mech. shutoff:
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min:	12	+++++++++++++++++++++++++++++++++++++++	1000s.: (31.537,5)
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump	12 2300	+++++++++++++++++++++++++++++++++++++++	1000S.: (31.537,5) Mech. shutoff: Electr. shutoff:
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump	12	- - - - - - - - - - 	1000S.: (31.537,5) Mech. shutoff:
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar:	12 2300	- - - - - - - - - - 	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff	12 2300 7,88,4		1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar:	12 2300 7,88,4	╌╂╌╂╌╂╌╂╌╂╾╂╾╂╾╂╾	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: -
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt:	12 2300 7,88,4 12	┤ ╫╫╫╫	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: - Shutoff
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff	12 2300 7,88,4 12		1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: - Shutoff
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt:	12 2300 7,88,4 12		1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: -
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at	12 2300 7,88,4 12 overflow valve:	+++++++++++++++++	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: - Shutoff electromagnet volt: -
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min:	12 2300 7,88,4 12 overflow valve:		1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: - Shutoff
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff	12 2300 7,88,4 12 overflow valve: 600		1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min:	12 2300 7,88,4 12 overflow valve: 600	┤╸╎╸╃╸┼╸┼╸╅╸╬╸╬╸╬╸╬╸╇╸╇╸╇╸╇╸╇╸╇╸	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt:	12 2300 7,88,4 12 overflow valve: 600	╅╌╂╌╇╌╂╌╂╍╂╼╂╼╂╼╂╍╂╼╂╸╂╍╉┉╂╼╂╍╂	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow :	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3	╌╉╌╂╌╇╌╂╌╂╍╂╼┾╼╂╍╂╾╂╾╀╼╂╼╉╸╂╸╂╍╂╼╃╾	1000S.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3)	╶┩╌┞╌╇╌╂╌╂╌╂╌╂╌╂╌╂╌╏ ╌╃ ╌╏╸╏╸╏╸╏╸╏╸╏╸	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3)	╌╂╌╂╌╃╌╂╌╂╌╂╼╉╼╈╼╁╾┼╾┼╾┼╼╂╸╋╾╂╼╂╍╂╼╂╼╂╼	1000S.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3)	╌╂╌╂╌╃╌╀╌╂╌╉╼╂╌╁╌╁╌┼╌╉╼╂╼╂╌╂┰╂╼╂╼╂╼╂╼╂┈┼	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300	╌╂╌╂╌╂╌╂╌╂╌╂╼╂╼╊╌╂╌┼╌╂╌╂╼╂╼╂╼╂╼╂╼╂╼╂╼╂╾╂┷	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300	╌╉╌╂╌╇╌╂╌╂╍╂╼╂╼╂╌╂┄┽╌╁╌╂╌╂╸╂╸╂╸╂╍╂╼╂╼╂╌╂╾╋┄╇┄	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000s.: - Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8,012,0 1000s.: (5,015,0) 2nd speed 1/min: 650
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow :	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8	╌╂╌╂╌╂╌╂╌╂╼╂╼╂╼╂╌╂┈╂┈╂╾╂╸╂╸╂╼╂╼╂╼╂╼╂╼╂╼╂╍╇╍╋╍╂╍╀	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8	╌╉╌╂╌╇╌╂╌╂╍╂╼╂╼╂╼╂╍╬╍╬╼╂╼╂╸╂┉╂╼╊╍╂╼╂╍╂╍╂╍╂╍╂╍╂╍╂╍╂╍	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow :	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8	╌╉╌╂╌╇╌╂╌╂╍╂╼╂╌╂╌╉╌┼╾╂╴╂╸╉┈╂╼╂┷╂╼╂╼╂╼╂┈╂╌╂╍╂╼╂┈┼╌╂	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8)	╌╉╌╂╌╇╌╂╌╂╍╂╾╂╼╂╼╂╍╂╾╂╾╂╾╂╸╂╸╋┈╂╼╂┷╃╼╂╼╇╼╂╍╂╍╂╍╂╼╂┈╉	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow :	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8)	╌╂╌╂╌╂╌╂╌╂╌╂╌╉╼╉╌╁╌╂╌┼╌╃╼╉╸╋╾╂╼╂╌╂╌╂┈╉┈╂╌╂╌╂╌╂╼╂╼╉╼	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8)	╌╂╌╂╌╃╌┞╌╂╌╉╼╉╼╂╌╂╌┼╾┽╼╉╸╉╸╂╸╂╸╂╼╂╼╂╼╂┈╂┄╂╌╂╌╉╼╂╼╂╾╂╸	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Delivery-quant. and	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.:	╌╂╌╂╌╇╌┞╌╂╍╉╼╋╌╂╌╂╌┽╍╂╺╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╺╂╸╂┈╂╌╂┈╂╾	1000s.: (31.537,5) Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Delivery-quant. and	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.:	╌╂╌╂╌╇╌╂╌╂╍╂╼╂╼╂╌╂╌┽╌╅╾╂╸╂┈╂╍╂╍╂╸╂┈╋╌╂┄╉╍╂┈╂┈╂┈╂┈╂┈╃╸╅╾╂╌╀	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Delivery-quant. and 1nd speed 1/min:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.:	╌╂╌╂╌╃╌╂╌╂╌╂╼╂╼╁╌╁╌╁╌╂╌╂╾╂╸╂╸╂╸╂╸╂╸╂╸╂┈╂┄╂┄╂┄╂┄╂┄╂┈╂┈╂	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Pelivery-quant. and Ind speed 1/min: Shutoff	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.:	╌╂╌╂╌╃╌╂╌╂╼╂╼╂╼╂╼╂╌╉╌╂╾╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂┈╇╍╂╸╂╸╂┈╂┈╉╼╂╸╂╸╂╸╂┈╂┈	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Delivery-quant. and 1nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.: 2800	╌╉╌╂╌╇╌╂╌╂╍╂╼╂╼╂╼╂╍╂╍╂╾╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸╂╸	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow cm3/10s: Delivery-quant. and 1nd speed 1/min: Shutoff electromagnet Volt: Delivery-quant. and	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.: 2800 12 0,01,6	╶╏╸╏╸┩╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏╸╏	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0
pressure bar: Shutoff electromagnet Volt: 3rd speed 1/min: Supply-pump pressure bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: Delivery-quant. and 1nd speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s:	12 2300 7,88,4 12 overflow valve: 600 12 41,683,3 (26,698,3) 2300 12 55,5138,8 (40,5153,8) breakaway char.: 2800 12 0,01,6	╶┧╸┠╸╇╸╂╸╂╸╂╸╂╸╂╸╂╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃╸╃	Mech. shutoff: Electr. shutoff: 1st speed 1/min: 390 Del. quantity cm3/: 0,03,0 1000S.: - Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 450 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8,012,0 1000S.: (5,015,0) 2nd speed 1/min: 650 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0,03,0 1000S.: - Load-dependent start of delivery: Injqty.dif.measurement:

Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1500 TD-travel : - 1.0...1.2 ' difference mm: -Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40,0...60.00 1000s.: -2nd speed 1/min: 400 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 33,00...43,00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 1,3...1,7 K KF MS mm: 17.0...19.0 mm: 10.5...13.9 XK ΧŁ Remarks: Overflow restriction 0.55 mm - Part No. ..303

Note inst. in remarks column

Test scheet

: OPF

Edition

: 03.12.92

replaces

Calibrating oil

: ISO-4113

Injection pump

: VE4/9F2300R487

Type number

: 0 460 494 330

Customer Part-No. :

Customer-specific information

Customer

: 02EL

Engine

: 1,7 YD mit EGR

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil

return temp.

with thermometer : 40.00...48.00

Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly

: 1 638 901 000

Opening |

Pressure

bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Length

mm: 840

Start of delivery

Prestroke

mm: -

(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

Speed

1/min: 1000

Setting value mm: 2.00...2.40

AFB/AFB

valve

Volt: 12

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1000 Speed

Setting value bar: 4.00...4.60

KSB/AFB valve

Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion

cm3/: 2.5

1000s.: (2.5)

Full-load del. w/out charge press.:

Speed

1/min: 1300

Del. quantity cm3/

1000s.: 32.00...33.00

11

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

cm3/: 2,5 Dispersion

1000s.: (2,5)

Low-idle speed regulation

1/min: 450

Del. quantity cm3/

1000s.: 8.00...10.00

1000s.: 3.50...4.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Residual-Delivery Setting

Speed

1/min: 525

Del. quantity cm3/

KSB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed

1/min: 2735

Del. quantity cm3/

1000s.: 7.00...11.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Start:

Speed

1/min: 100

E05

Del. quantity cm3/: 28.00...44.00 Shutoff 1000s.: 28.00 mind electromagnet Volt: 12 KSB/AFB 10th speed 1/min: 800 Valve Volt: 12 mm: 1.90...4.30 B TD travel Shutoff mm: (1.90...4.30) electromagnet Volt: 12 KSB/AFB Volt: 12 valve Load-dependent start of delivery: Shutoff Inj.-qty.dif.measurement: electromagnet Volt: 12 Speed 1/min: 1000 Supply-pump pressure characteristic: Inj.—qty. cm3/difference 1000s.: - 8.00...10.0 # 1/min: 2300 1st speed KSB/AFB Supply-pump Volt: 12 valve bar: 7.60...8.20 pressure Shutoff KSB/AFB electromagnet Volt: 12 Volt: 12 valve SP press.-dif.measurement Shutoff pompa di mandata (FP) electromagnet Volt: 12 2nd speed 1/min: 1000 1.Speed 1/min: 1000 Supply pump Supply-pump pressure pressure bar: 4.00...4.60 bar: - 0.1...0.3 # difference KSB/AFB KSB/AFB Volt: 12 valve valve Volt: 12 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 800 3rd speed Supply-pump Inspection-pump test specifications bar: 3.40...4.00 pressure Test specifications in parentheses KSB/AFB Volt: 12 valve Timing device characteristic: Shutoff electromagnet Volt: 12 3rd speed 1/min: 1000 mm: 2.00...2.40 TD travel Overlow quantity at overflow valve: mm: (1.50...2.90) KSB/AFB 1/min: 700 1st speed valve Volt: 12 KSB/AFB Shutoff valve Volt: 12 electromagnet Volt: 12 Shutoff 1/min: 800 4th speed electromagnet Volt: 12 TD travel mm: 0.90...1.70 : 41.70...83.40 Overflow cm3/10s: (26.70...98.40) 1/min: 2300 mm: (0.60...2.00) quantity KSB/AFB 2nd speed valve **Volt: 12** KSB/AFB Shutoff Volt: 12 valve electromagnet Volt: 12 Shutoff 1/min: 2300 5th speed electromagnet Volt: 12 mm: 7.50...8.30 TD travel Overflow : 55.60...139.00 mm: (7.20...8.60) cm3/10s: (40.60...153.00) quantity KSB/AFB Volt: 12 valve Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 12 1/min: 300 9th speed 5th speed 1/min: 2735 mm: 0.80...3.20 A TD travel KSB/AFB mm: (0.80...3.20) valve Volt: 12 KSB/AFB Shutoff Volt: 12 valve electromagnet Volt: 12

Del. quantity cm3/: 7.00...11.00 Del. quantity cm3/: 8.00...10.00 1000S.: (5.50...12.50) 1000s.: (5.00...13.00) 1/min: 2575 8th speed KSB/AFB High Idle: valve Volt: 12 Shutoff 1/mi: 550 1st speed electromagnet Volt: 12 KSB/AFB Del. quantity cm3/: 17.00...23.00 valve Volt: 12 1000s.: -Shutoff 9th speed 1/min: 2300 electromagnet Volt: 12 Del. quantity cm3/: 8.00...10.00 10008:: (5.50...12.50) KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Residual: Del. quantity cm3/: 27.20...29.80 1000s.: (26.20...30.80) 10th speed 1/min: 2000 1.Rotacao 1/min: 525 KSB/AFB KSB/AFB valve Volt: 12 valve Volt: 12 Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.00...31.00 1000s.: (27.20...31.80) 2nd speed 12th speed 1/min: 1300 KSB/AFB KSB/AFB Volt: 12 valve valve Volt: 12 Shutoff Shutoff electromagnet Volt: 12 Det. quantity cm3/: 0.00...1.60 1000s.: -Load-dependent start of delivery: KSB/AFB Inj.-qty.dif.measurement: valve Volt: 12 Shutoff 1st speed 1/min: 1000 electromagnet Volt: 12 Del. quantity cm3/: 25.40...28.40 Inj.-qty. cm3/ : - 11.0..19.0' difference 1000s.: -1000s.: (23.90...29.90) KSB/AFB valve **Volt: 12** Mech. shutoff: Shutoff electromagnet Volt: 12 Electr. shutoff: TD-travel dif.measurement: 1st speed 1/min: 450 correttore anticipo iniezione (SV): Del. quantity cm3/: 0.00...3.00 1/min: 1000 1st speed 1000s.: (0.00...3.00) TD-travel : - 0.6..0.8 ' Shutoff difference mm: electromagnet volt: -KSB/AFB valve Volt: 12 Damper set qty.: Shutoff electromagnet Volt: 12 LFG-setting: solidale con carcassa: Part-load del.at 3rd inj.-qty. Idle delivery: terza fermo della portata stop (EGR set) 1st speed 1/min: 450 scarico) (ARF) KSB/AFB gaz d'échappement-ARF) valve Volt: 12 Spacing mm: 12.0 Shutoff electromagnet Volt: 12 1st speed 1/min: 1000

KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.40...23.40 1000s.: (19.90...24.90) Automatic starting fuel delivery: 1/min: 400 1st speed KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...35.00 1000s.: (25.00...35.00) 2nd speed 1/min: 550 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/; 22.50...32.50 1000s.: (22.50...32.50) 3rd speed 1/min: 100 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.00...44.00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.3...5.7 mm: 1.3...1.7 K KF MS Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 21.08.92 Replaces : 14.10.91 Test oil : ISO-4113 Combination no. : 0 400 074 087 Injection pump Pump designation : PES4M55C32ORS175 EP type number : 0 410 054 957 Governor Governor design. : RSV350...1650N00353-: 0 420 033 043 Governer no. Customer-spec. information Customer : MB-NFZ Engine : 0M601 (2,3L) 1st version kW : 51.0 TEST BENCH REQUIREMENTS Test oil inlet tempo. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 2.00...2.10

Rack travel in mm : 20.00...22.00

: (1.95...2.15)

Firing order : 1-3-4-2 Phasina : 0-90-180-270 Tolerance $+ - ^{\circ} : 0.00 (1.00)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1630Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 4.0...4.1 100 s: (3.9...4.2) Spread cm3 : 0.2100 s: (0.3) rpm : 350.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.5...0.7 100 s: (0.4...0.9) cm3 : 0.1 Spread 100 s: (0.1) GUIDE SLEEVE POSITION Control-lever position Dearee: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1630 Del.quantity : 40.0...41.0 1000 : (39.0...42.0) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 109...117 Testing: 1st rack travel in: 11.2 Speed rpm : 1670..1680 2nd rack travel in: 4.00 Speed rpm : 1775...1793 4th rack travel in: 2000 : 0.30...1.70 Speed rpm

Prestroke mm

LOW IDLE 1 Control lever

position degrees: 72...80 Setting point w/out bumper spring

: 350 Speed man Rack travel in mm: 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 20.10

Speed rpm : 350 Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in m: 12.10...12.20

2nd speed rpm : 1000

Rack travel in m: 12.60...12.80 3rd speed rpm : 1400

Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 1000 rpm

Del.quantity cm3/: 38.5...40.0 1000 s: (37.5...41.0)

cm3 : 2.50 1000 s: (3.0) Spread

Speed rpm : 1400 Del.quantity cm3/ : 38.5...40.5

1000 s: (37.5...41.5)

cm3 : 2.50

Spread 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.0...7.0
1000 s: (4.5...9.0)

cm3 : 1.00

Spread 1000 s: (1.50)

:

Remarks:

Start-of-delivery sensor system: adjustment and blocking with device

 $KDEP 1077 = 15.3^{\circ}...15.7^{\circ}$

(15.2...15.8°) angular displacement of cam following start of delivery of

cylinder no. 1.

E10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 27,11,92 Replaces Test oil : ISO-4113 Combination no. : 0 400 074 090 Injection pump Pump designation : PES4M55C320RS175 EP type number : 0 410 054 957 Governor Governor design. : RSV350...1650MUC353-13 : 0 420 033 050 Governer no. Customer-spec. information : MB-NFZ Customer Engine : 0M601 (2,3L) 1st version kW : 50.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder : 1 688 901 111 assembly Opening pressure, bar : 147...150 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Phasing : 0-90-180-270 Tolerance $+ - ^{\circ} : 0.00 (1.00)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rom : 1630Rack travel in mm: 11.80...11.90 Del.quantity cm3/: 3.9...4.0 100 s: (3.8...4.1) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 350.0Rack travel in mm : 5.3. .5.5 Del.quantity cm3/: 0.6...0.8 100 s: (0.5...1.0) Spread cm3 : 0.1100 s: (0.1) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1630 Del.quantity : 39.0...40.0 1000 : (38.0...41.0) : 2.50 Spread cm31000 : (3.00) RATED SPEED 1st version Control lever position degrees: 102...110 Testing: 1st rack travel in: 10.9 rpm : 1685...1695 Speed 2nd rack travel in: 4.00 : 1766...1784 Speed rpm 4th rack travel in: 2000 Speed : 0.30...1.70 rom

Firing order

: 1-3-4-2

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 20.00...22.00

: 2.00...2.10 : (1.95...2.15)

LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rom Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 20.10 : 350 Speed rpm Rack travel in mm : 5.30...5.50 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1630 Rack travel in m: 11.80...11.90 2nd speed rpm : 1000 Rack travel in m: 11.70...11.90 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1000 rpm Del.quantity cm3/: 37.0...39.0 1000 s: (36.0...40.0) Spread cm3 : 2.50 1000 s: (3.0) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 6.0...8.0 1000 s: (5.5...10.0) Spread cm3 : 1.00 1000 s: (1.50) Remarks: Start-of-delivery sensor system:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet

: MB

Edition

: 11.01.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 074 886

Injection pump

Pump designation : PES4M55C32ORS167

EP type number

: 0 410 054 960

Governor

Governor design.: RSF375/2000M55-7

Governer no.

: 0 420 021 268

Customer-spec. information Customer

: MB-PKW

Engine

: 0M601-2.3L

1st version kW

: 59.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

·: 1 688 901 111 assembly

Opening |

pressure, bar : 147...150

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Firing order

E13

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed

rpm : 375.0

Rack travel in mm: 5.1...5.3 Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread

cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity

: 38.0...39.0

1000 : (37.0...40.0) cm3

Spread

: 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7.00...7.50

Speed rpm : 2200 4th rack travel in: 2500

Speed

rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed

: 1000 rpm

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed

rpm : 375

Rack travel in mm: 5.2

Testing:

Speed : 250 rpm Minimum rack trave: 10.20 : 375 Speed mqn

Rack travel in mm : 5.10...5.30

: 1000 Speed rpm Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING Speed rpm : 450

Rack travel in mm : 3,80...4,00 : (3,70...4,10)

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1000 1st speed

Rack travel in m: 12.10...12.20

2nd speed rpm : 1800

Rack travel in m: 11.80...12.00

3rd speed rpm : 2000

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 1800 man

Del.quantity cm3/ : 40.0...41.5

1000 s: (39.0...42.5)

Spread cm3 : 2.50

1000 s: (3.0)

Speed rpm : 2000 Del.quantity cm3/: 40.0...42.0

1000 s: (39.0...43.0)

cm3 : 2.50Spread

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/ : 54.0...0.0

1000 s: (54.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed : 2200 rpm

Rack travel in mm : 8.70...9.10 Del.quantity cm3/: 29.0...33.0

1000 s: (28.0...34.0)

Spread cm3 : 2.50

1000 s: (3.00)

LOW IDLE

Speed rpm : 375

Rack travel in mm : 5.10...5.30

Del.quantity cm3/: 6.0...7.0

1000 s: (5.5...10.0)

Spread cm3 : 1.001000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE

(ELA)

rpm : 425 Speed

Rack travel in mm: 6,5...8,1

Del.quantity cm3/: 12.00...20.00

1000 s: -

hPa : 400 Vacuum

Remarks:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet

Edition

: 18.12.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 074 888

Injection pump

Pump designation : PES4M55C32ORS183

: 0 410 054 955 EP type number

Governor

Governor design. : RSF375/2300455-12

Governer no. : 0 420 021 169

Customer-spec. information

Customer

: MB-PKW

Engine

: OM601-ECE(W202)

1st version kW

: 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

pressure, bar

assembly

: 1 688 901 111

Opening |

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Lenath mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order

: 1- 3- 4- 2

E15

Phasina : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100 Del.quantity : 30.0...38.0)

cm3 : 2.50 Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.8...9.2

Speed rpm : 2500

4th rack travel in: 2950

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER POSITION

rpm

Rack travel in mm: 1,9...2,0

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

Speed CIDIN Spread cm3 : 2.50Rack travel in mm: 6.8 1000 s: (3.00) Testing: Speed : 250 rom STARTING FUEL DELIVERY Minimum rack trave: 11.00 rpm : 375 Rack travel in mm : 6.70...6.90 Speed rom : 100 Del.quantity cm3/: 54.0...0.0 Rack travel in mm: 3.00 1000 s: (52.9...0.0) Rack travel in mm : 20.10...0.00 : 650...750 Speed rom : 1000 Speed rpm Maximum rack trave: 2.00 HIGH IDLE SET IDLE AUXILIARY SPRING : 500 Speed riom 1st version Rack travel in mm : 4.60...4.80 Aneroid pressure h: 1100 : (4.50...4.90) rpm : 2500 Rack travel in mm : 8.80...9.20 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 1000 s: (3.00) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 12.90...13.00 nd speed rpm : 1600 Rack travel in m: 12.40...12.60 2nd speed LOW IDLE 3rd speed rpm : 2300 Rack travel in m: 11.70...11.90 rpm : 375 Speed Rack travel in mm : 6.70...6.90 Aneroid/Altitude Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Settina SETTING PNUEUMATIC FAST IDLE Speed COM : 1000 (ELA) hPa : 940 Pressure Rack travel mm : 0.00...0.20 Speed rpm : 425 Measurement Rack travel in mm : (8,2...9.8) Del.quantity cm3/: -1000 s: (13.00...21.0) Speed 1/min: 1000 1st pressure hPa : 900 Vacuum hPa : 400 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Remarks: Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS Sliding sleeve pre-travel = 6.5 mm 1st version TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. Aneroid pressure h: 1100 Speed rpm : 1600

Del.quantity cm3/ : 36.0...37.5

1000 s: (35.0...38.5)

Spread cm3 : 2.50 With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm 1000 s: (3.0) Aneroid pressure h: 1100 CHECKING THE IDLE-SPEED AUXILIARY : 2300 Speed rpm SPRING CUTOFF Del.quantity cm3/: 36.0...38.0 -Control-lever position 49°, max. 1000 s: (35.0...39.0) 0.2 mm control-rod travel deduction

allowable after switchover point (of

starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

Note remarks

Test sheet

Edition

: 23.10.92

Replaces Test oil

: ISO-4113

Combination no. : 0 400 074 889

Injection pump

Pump designation : PES4M55C32ORS172

EP type number

: 0 410 054 958

Governor

Governor design, : RSF375/2300M75-2

Governer no.

: 0 420 021 166

Customer-spec, information Customer

: MB-PKW

Engine

: 0M601-Moof II

1st version kW

: 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

pressure, bar

assembly

: 1 688 901 111

Opening

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length ma

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80

Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order

: 1-3-4-2

E18

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rom: 1000

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed

rpm : 375.0

Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.6...0.7

Spread

100 s: (0.5...1.0) cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...35.0)

Spread

: 2.50 cm3

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.20...8.60

rpm : 2500 Speed

4th rack travel in: 2950

: 0.00...1.00 Speed rom

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375 Spread cm3 : 2.50 Rack travel in mm : 6.5 1000 s: (3.00) Testina: rpm : 250 Speed STARTING FUEL DELIVERY Minimum rack trave: 11.00 Speed rpm : 375 Rack travel in mm : 6.40...6.60 Speed rpm : 100 Del.quantity cm3/ : 54.0...0.0 Rack travel in mm : 2.50 Sceed rom : 650...750 1000 s: (54.0...0.0) : 1000 Speed rpm Rack travel in mm : 20.10...0.00 Maximum rack trave: 1.50 HIGH IDLE SET IDLE AUXILIARY SPRING Speed : 400 וחכים 1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.20...8.60 Rack travel in mm : 5.50...5.70 : (5.40...5.80) TORQUE CONTROL Del.quantity cm3/: 18.0...22.0 Torque control curve - 1st version 1000 s: (17.0...23.0) rpm : 1000 1st speed Spread cm3 : 2.50Rack travel in m: 12.30...12.40 1000 s: (3.00) : 1800 2nd speed rpm Rack travel in m: 11.70...11.90 LOW IDLE 3rd speed rpm : 2300 Rack travel in m: 11.10...11.30 Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Aneroid/Altitude Compensator Test Spread cm3 : 1.00 1000 s: (1,50) 1st version Setting SETTING PNUEUMATIC FAST IDLE Speed : 1000 rom (FLA) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Speed rpm : 425 Rack travel in mm : (8.10...9.70) Measurement 1/min: 1000 Speed Del.quantity cm3/:-1000 s: (14.00...22.00) 1st pressure hPa : 900 hPa : 400 Vacuum Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Remarks: Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS Sliding sleeve pre-travel = 6.5 mm 1st version CHECKING THE IDLE-SPEED AUXILIARY Aneroid pressure h: 1100 SPRING CUTOFF Speed rpm : 1800 Del.quantity cm3/ : 34.0...35.5 -Control-lever position 49°, max. 0.2 mm control-rod travel deduction 1000 s: (33.0...36.5) allowable after switchover point (of Spread cm3 : 2.50 starting cam) up to 1000 1/min. 1000 s: (3.0) Control-lever position 46.5°, Aneroid pressure h: 1100 control-rod travel deduction must be Speed : 2300 greater than 0.2 mm after switchover rpm Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0) point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start—of—delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Note remarks

Test sheet

: MB

Edition

: 18.12.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 074 890

Injection pump

Pump designation : PES4M55c320RS183

EP type number

: 0 410 054 955

Covernor

Governor design. : RSF375/2300M75-1

Governer no.

: 0 420 021 163

Customer-spec. information

Customer

: MB-PKW

Engine

: 0M601-ECE(W202)

1st version kW

: 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...22.00 Firing order

: 1-3-4-2

E21

Phasing : 0-90-180-270

Tolerance + - °

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed

rpm : 375.0

Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 0.6...0.7 100 s: (0.5...1.0)

Spread

cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100 Del.quantity : 30.0...38.0)

cm3

Spread

: 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.80...9.20

Speed rpm : 2500

4th rack travel in: 2950

Speed

rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

rpm

: 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 6.8 Testing: Speed : 250 rom Minimum rack trave: 11.00 rpm : 375 Rack travel in mm : 6.70...6.90 Rack travel in mm: 3.00 Speed rom : 650...750 Speed rom : 1000 Maximum rack trave: 2.00 SET IDLE AUXILIARY SPRING Speed rpm : 500 Rack travel in mm : 4.90...5.10 : (4.80..5.20) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 12.90...13.00 : 1600 2nd speed rom Rack travel in m: 12.40...12.60 3rd speed rpm : 2300 Rack travel in m: 11.70...11.90 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 1000 Pressure hPa : 940 Rack travel mm : 0.00...G.20 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.30...0.50 2nd pressure hPa : 750 Rack travel in m: 1.40...1.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1600 Del-quantity cm3/ : 36.0...37.5 1000 s: (35.0...38.5) Spread cm3 : 2.501000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2300 Del.quantity cm3/: 36.0...38.0 1000 s: (35.0...39.0)

Spread cm3 : 2.50 1000 s: (3.00)

Speed rpm : 100 Del.quantity cm3/ : 54.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00

HIGH IDLE

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 6.0...7.0
1000 s: (5.5...10.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8,2...9.8)
Del.quantity cm3/: 1000 s: (13.0...21.0)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE—SPEED AUXILIARY SPRING CUTOFF
—Control—lever position 49°, max.

0.2 mm control—rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control—lever position 46.5°, control—rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Note remarks

Test sheet

Edition

: 25.09.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 074 891

Injection pump

Pump designation : PES4M55C320RS169

EP type number

: 0 410 054 959

Governor

Governor design. : RSF375/2300M75

Governer no.

: 0 420 021 160

Customer-spec. information

Customer

: MB-PKW

Engine

: 0M601-ECE

1st version kW

: 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 688 901 111

Opening

pressure, bar

: 147...150

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

E24

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

Spread

1st speed rpm : 1000

Rack travel in mm: 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm: 6.4...6.6 Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0) cm3 : 0.1

Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1100

Del.quantity

: 33.0...34.0 1000 : (32.0...35.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8.50...8.90

Speed rpm : 2500 4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm: 1,2...1,3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed nom : 375 Rack travel in mm : 6.5 Testina: Speed rom Minimum rack trave: 11.00 Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00 Speed : 660...760 man Speed rpm : 1000 Maximum rack trave: 1.30 SET IDLE AUXILIARY SPRING Speed : 400 rom Rack travel in mm: 5.3...5.5 : (5.2...5.6) TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 12.30...12.40 1st speed : 1800 2nd speed rpm Rack travel in m: 11.70...11.90 rpm : 2300 3rd speed Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed COM : 1600 Pressure hPa : 950 Rack travel mm : 0.00...0.20 Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 33.0...34.5 1000 s: (32.0...35.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100 : 2300 Speed rpm Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0)

Spread cm3 : 2.501000 s: (3.00) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 54.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 1000 s: (3.00) LOW IDLE Speed rpm : 375 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) Spread cm3 : 1.001000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed rpm : 425 Rack travel in mm : (8.1...9.7) Del.quantity cm3/: -1000 s: (12.0...20.0) Vacuum hPa : 400 Remarks: Sliding sleeve pre-travel = 6.5 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°,

control-rod travel deduction must be

greater than 0.2 mm after switchover

point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to $control-rod\ travel = 0\ mm$

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At n=1000 min. -1, I=2.5 A, difference in delivery referenced to full-load delivery (9.0...11.0) ccm/1000 strokes. +

Note remarks

Test sheet

: MB

Edition

: 13.03.92

Replaces

: 15.10.91

Test oil

: ISO-4113

Combination no. : 0 400 074 895

Injection pump

Pump designation : PES4M55C320RS110

EP type number

: 0 410 054 956

Governor

Governor design. : RSF375/1700M21-1

Governer no.

: 0 420 021 149

Customer-spec. information

Customer

: MB-NF7

UNTERTAGE

Engine

: 0M616 2.4L ADA

1st version kW

: 41.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm

: 1.70...1.80

: (1.65...1.85)

Rack travel in mm : 20.00...0.00

Firing order

: 1-3-4-2

E27

Phasina : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 3.1...3.2

100 s: (3.0...3.3)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed

rpm : 375.0

Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 0.6...0.7

Spread

100 s: (0.5...0.9) cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1100 Del.quantity : 31.5...32.5

Spread

cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 6.7...7.1

Speed rpm : 1900

4th rack travel in: 2950

Speed rpm

: 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed

rpm : 1000

Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control Lever

position degrees: 12...16 Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 6.4

Speed : 250 mach Minimum rack trave: 10.00 Speed : 375 rpm Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 : 730...830 rpm : 1000 Speed TOM Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm : 450 Rack travel in mm: 5.1...5.3 : (5.0...5.4) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 11.70...11.80 2nd speed rpm : 1400 Rack travel in m: 11.30...11.50 3rd speed rpm : 1700 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Settina Speed : 1000 CDW. Pressure : 950 hPa : 0.00...0.20 Rack travel mm Measurement Speed $1/\min : 1000$ 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 beed : 1400 rpm Del.quantity cm3/: 33.0...34.5 1000 s: (32.0...35.5) Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 1700 Del.quantity cm3/ : 33.0...35.0 1000 s: (32.0...36.0) Spread cm3 : 2.501000 s: (3.00)

Testing:

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

LOW IDLE

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.0 mm

Note remarks

Test sheet : M3

Edition : 13.03.92 Replaces : 22.03.91 Test oil : ISO-4113

Combination no. : 0 400 074 896

Injection pump

Pump designation : PES4M55C32ORS110 EP type number : 0 410 054 956

Governor

Governor design. : RSF375/2200M21 Governer no. : G 420 021 148

Customer-spec. information Customer : MB-NFZ

Engine : 0M616 2.41 ADA

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 20.00...0.00 Firing order : 1- 3- 4- 2

F01

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

Spread cm3 : 0.2

100 s: (0.3)

rpm : 375.0 2nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...0.9)

cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 36.0...37.0 1000 : (35.0...38.0)

Spread : 2.50 cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7.8...8.2 rpm : 2350 Speed

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000 Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

rpm : 375

Rack travel in mm: 6.2

Testing: Speed rpm : 250 Minimum rack trave: 10.00 : 375 Speed rpm Rack travel in mm : 6.10...6.30 Rack travel in mm: 2.00 Speed rpm : 730...830 Speed : 1000 rom Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm : 450 Rack travel in mm : 5,1...5.3 : (5.0...5.4) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.60...12.70 2nd speed rpm : 1700 Rack travel in m: 12.20...12.40 3rd speed rom : 2100 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1000 LOW Pressure hPa : 950 : 0.00...0.20 Rack travel mm Measurement 1/min: 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1700

Del.quantity cm3/: 38.0...40.0

1000 s: (37.0...41.0)

Spread cm3 : 2.50 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2100 Del.quantity cm3/: 37.0...39.0 1000 s: (36.0...40.0)

cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version Aneroid pressure h: 1100 Speed rom : 2350

Speed rpm : 2350 Rack travel in mm : 7.80...8.20 Del.quantity cm3/ : 18.0...22.0 1000 s: (17.0...23.0)

Spread cm3 : 2.50

1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.10...6.30
Del.quantity cm3/: 6.0...7.0
1000 s: (5.5...9.0)
Spread cm3 : 1.00

1000 s: (1.50)

Remarks:

Sliding sleeve pre-travel = 6.0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Spread

Note remarks

Test sheet

: MB

Edition

: 18.12.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 074 904

Injection pump

Pump designation : PES4M55C32ORS169

EP type number

: 0 410 054 959

Governor

Governor design. ; RSF375/2300M56-6

Governer no.

: 0 420 021 110

Cust. part no.

: T8

Customer-spec. information

Customer

: MB-PKW

Engine

: 0M601-ECE

1st version kW

: 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 1 688 901 111 assembly

Opening

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - °

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.3...3.4

100 s: (3.2...3.5)

Spread

cm3 : 0.2

100 s: (0.3)

rpm : 375.0 2nd speed

Rack travel in mm : 6.4...6.6

Del.quantity cm3/: 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0 1000 : (32.0...35.0)

: 2.50 cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

rpm : 2500 Speed

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

rpm

: 1000

Rack travel in mm: 1.2...1.3

LOW IDLE 1

Control lever

F03

position degrees: 12...16 STARTING FUEL DELIVERY Setting point w/out bumper spring rpm : 375 Speed rpm : 100
Del.quantity cm3/ : 54.0...0.0
1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00 Rack travel in mm: 6.5 Testing: Speed rpm : 250 Minimum rack trave: 11.00 Speed rpm : 375 Rack travel in mm : 6.40...6.60 HIGH IDLE Rack travel in mm: 2.00 1st version : 660...760 Speed Aneroid pressure h: 1100 ripm Speed rpm : 1000 rpm : 2500 Maximum rack trave: 1.30 Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 5.3...5.5 : (5.2...5.6) 1000 s: (3.00) LOW IDLE TORQUE CONTROL Torque control curve - 1st version Speed rpm : 375 1st speed rpm : 1000 Rack travel in mm : 6.40...6.60 Rack travel in m: 12.30...12.40 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...10.0) 2nd speed rpm : 1800 Rack travel in m: 11.70...11.90 cm3 : 1.00 Spread 3rd speed rpm : 2300 1000 s: (1.50) Rack travel in m: 11.40...11.60 SETTING PNUEUMATIC FAST IDLE Aneroid/Altitude (ELA) Compensator Test rpm : 425 1st version Rack travel in mm : (8.1...9.7) hPa : 950 Pressure Del.quantity cm3/: -1000 s: (12.0...20.3) Rack travel mm : 0.00...0.20 Vacuum hPa : 400 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 Remarks: 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Sliding sleeve pre-travel = 6.5 mm FUEL DELIVERY CHARACTERISTICS CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF 1st version -Control-lever position 49°, max. 0.2 mm control-rod travel deduction Aneroid pressure h: 1100 allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, : 1800 Speed rpm Del.quantity cm3/: 33.0...34.5 1000 s: (32.0...35.5) Spread cm3 : 2.50 1000 s: (3.0) control-rod travel deduction must be greater than 0.2 mm after switchover Aneroid pressure h: 1100 point (of starting cam). Speed rpm : 2300 Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0) TESTING PNEUMATIC SHUTOFF DEVICE Spread cm3 : 2.50-Control lever at idle stop. 1000 s: (3.00) With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to

control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 21.08.92 : 15.10.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 075 009 Injection pump Pump designation : PES5M55C32ORS176 EP type number : 0 410 055 975 Governor Governor design. : RSV350...1650MOC353-: 0 420 033 042 Governer no. Customer-spec. information Customer : MB-NFZ Engine : 0M602 (2,9L) 1st version kW : 62.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1- 2- 4- 5- 3 Phasing : 0-72-144-216-288 Tolerance + - ° : 0.00 (1.00)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1630 Rack travel in mm : 12.10...12.20 Del.guantity cm3/: 4.0...4.1 100 s: (3.9...4.2) Spread cm3 : 0.2100 s: (0.3) rpm : 350.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.5...0.7 100 s: (0.4...0.9) cm3 : 0.1 Spread 100 s: (0.1) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1630 Del.quantity : 40.5...41.5 1000 : (39.5...42.5) : 2.50 Spread cm3 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 109...117 Testing: 1st rack travel in: 11,2 Speed rpm : 1670...1680 2nd rack travel in: 4.00 rpm : 1775...1793 Speed 4th rack travel in: 2000 Speed rpm : 0.30...1.70

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 20.00...22.00

: 2.00...2.10

: (1.95...2.15)

BOSCH IN

Note rem

Test she

Edition

Replaces

Test oil

Combinat

Injectio Pump des

EP type

Governor Governor

Governer

Customer

Customer

Engine

1st vers

TEST BEN

Test oii

inlet te

Overflow

4-5-3 LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring 4-216-288 Speed rpm : 350 Rack travel in mm: 5.4 **~**00) Testing: Speed rpm : 100 Minimum rack trave: 20.10 Speed : 350 שכלבו Rack travel in mm : 5.30...5.50 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 _12.20 TORQUE CONTROL -1 Torque control curve - 1st version 4.2) 1st speed rpm : 1630 Rack travel in m: 12.10...12.20 2nd speed rpm : 1000 Rack travel in m: 12.90...13.10 3rd speed rpm : 1400 Rack travel in m: 12.50...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 1000 Lbw Del.quantity cm3/: 40.0...41.5 1000 s: (39.0...42.5) Spread cm3 : 2.50 1000 s: (3.0) Speed rpm : 1400 Del.quantity cm3/ : 39.5...41.5 **3,00** 1000 s: (38.5...42.5) AD STOP Spread cm3 : 2.501000 s: (3.00) STARTING FUEL DELIVERY _42.5) Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 5.0...7.0 **7**680 1000 s: (4.5...9.0) Spread cm3 : 1.001000 s: (1.50) **2**793 3.70 Remarks: F07

Test sheet

: KHD

E07

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

> Inlet pr Test noz assembl Opening pressur Test lin Outside : x Wall t x Length (A) Inje Insp

BEGINNIN Test pre Prestrok

Rack tra

Set

per

Firing o F08

Rack travel in mm : 9.00...12.00 Firing order : 1-8-7-2-6-5-4-3 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Speed LOW IDLE Control positio BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

Edition : 30.04.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 075 013

Injection pump

Pump designation : PES5M55C32ORS176 EP type number : 0 410 055 975

Governor

Governor design. : RSV400..1800M0c355

Governer no. : 0 420 033 049

Customer-spec. information Customer : MB-NFZ

: 0M602 D 29 Engine

1st version kW : 67.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ}$: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1800

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1800

: 40.5...41.5 Deliquantity

1000 : (39.5...42.5) : 2.50

Spread Cn3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 83...91

Testing:

1st rack travel in: 10.80

Speed rpm: 1840...1850 2nd rack travel in: 4.00

Speed rpm : 1920...1940 4th rack travel in: 2250

rpm : 0.30...1.70Speed

LOW IDLE 1

F08

Control lever position degrees: 55...63 Setting point w/out bumper spring npm : 400 Rack travel in mm: 5.4 Testing: Speed : 100 rpm Minimum rack trave: 20.10 : 400 rpm Rack travel in mm : 5.30...5.50 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version. st speed rpm : 1800 Rack travel in m: 11.80...11.90 1st speed 2nd speed : 1000 rpm Rack travel in m: 12.40...12.60 3rd speed rpm : 1400 Rack travel in m: 12.20...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1000 Del.quantity cm3/ : 38.0...39.5 1000 s: (37.0...40.5) Spread cm3 : 2.501000 s: (3.0)

: 1400 Speed **CDM** Del.quantity cm3/: 39.0...41.0 1000 s: (38.0...42.0) Spread cm3 : 2.501000 s: (3.00)

STARTING FUEL DELIVERY

Speed rom : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00

LOW IDLE

Speed : 400 rpm Rack travel in mm : 5.30...5.50 Del.quantity cm3/ : 5.0...7.0 1000 s: (4.5...9.0) Spread cm3 : 1.001000 s: (1.50)

Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1. BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

Edition

: 05,10.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 075 014

Injection pump

Pump designation

: PES5M55C32ORS176

EP type number

: 0 410 055 975

Governor

Sovernor design.

: RSV350...1650M0c353-

14

Governer no.

: 0 420 033 051

Customer

Customer-spec. information

: MB-NFZ

Engine

: 0M602 (2,9L)

1st version kW

: 62.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly

: 1 688 901 111

Opening

pressure, bar

: 147...150

Test limes

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

F10

Firing order

: 1- 2- 4- 5- 3

Phasina

: 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1630

Rack travel in mm: 12.20...12.30

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

Spread

cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 0.6...0.8

Spread

100 s: (0.5...1.0) cm3 : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity

: 40.5...41.5

1000 : (39.5...42.5)

Spread

: 2.50 cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 11.3

rpm : 1670...1680 Speed

2nd rack travel in: 4.00

rpm : 1775...1793 Speed

4th rack travel in: 2000

: 0.30...1.70 Speed rpm

LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 20.10 rpm : 350 Rack travel in mm : 5.10...5.30 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1630 Rack travel in m: 12.20...12.30 2nd speed rpm : 1000 Rack travel in m: 12.20...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1000 Del.quantity cm3/: 38.5...40.5 1000 s: (37.5...41.5) cm3 : 2.50 Spread 1000 s: (3.0) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 54.0...0.0 1000 s: (54.0...0.0) Rack travel in mm : 20.10...0.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 6.0...8.0 1000 s: (5.5...10.0) cm3 : 1.00Spread 1000 s: (1.50) Remarks:

Start-of-delivery sensor system: adjustment and blocking with device KDEP $1077 = 15.3^{\circ}...15.7^{\circ}$ (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

Edition : 18.12.92

Replaces Test oil

: ISO-4113

: MB

Combination no.

: 0 400 075 923

Injection pump

Pump designation : PES5M55C32ORS168

EP type number : 0 410 055 978

Governor

Governor design. : RSF350/2000M55-8 : 0 420 021 269

Governer no.

Customer-spec. information

Customer

: MB-PKW

Engine

: 0M602-2.9L

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 1 688 901 111

Opening.

pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order

: 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 0.6...0.7 100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 38.0...39.0 Del.quantity

1000 : (37.0...40.0)

cm3 : 2.50 Spread

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7.00...7.50

rpm : 2200 Speed

4th rack travel in: 2500

Speed rom : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

: 1000 Speed rpm Rack travel in mm: 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 5.3

Testing:

Speed : 250 L Du Minimum rack trave: 9.20 : 350 Speed ron

Rack travel in mm : 5.20...5.40

rpm : 1000 Speed Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING Speed rpm : 450

Rack travel in mm: 4.0...4.2

: (3.9...4.3)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.10...12.20

2nd speed rpm : 1800

Rack travel in m: 11.90...12.10 3rd speed rpm : 2000

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800

Del.quantity cm3/: 40.0...41.5

1000 s: (39.0...42.5)

cm3 : 2.50 Spread

1000 s: (3.0)

rpm : 2000 Speed

Del.quantity cm3/: 40.0...42.0

1000 s: (39.0...43.0)

Spread cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 54.0...0.0

1000 s: (54.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2200 Rack travel in mm : 8.90...9.30 Del.quantity cm3/: 29.0...33.0

1000 s: (28.0...34.0)

cm3 : 2.50Spread

1000 s: (3.00)

LOW IDLE

Speed rpm

Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 6.0...7.0

1000 s: (5.5...10.0)

Spread cm3 : 1.00 1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE

(ELA)

rpm : 400 Speed

Rack travel in mm : (5.3...6.9)

Del.quantity cm3/:-

1000 s: (7.0...15.0)

hPa : 400 Vacuum

Remarks:

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device $KDEP 1077 = 15.3^{\circ}...15.7^{\circ}$

(15.2...15.8°) angular displacement of cam following start of delivery of

cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

Edition : 04.03.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 075 927

Injection pump

Pump designation : PES5M55C32ORS168 EP type number : 0 410 055 978

Governor

Governor design: : RSF350/2000M69-8

: 0 420 021 167 Governer no.

Customer-spec, information Customer : MB-PKW

Engine : 0M602-2.9L

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3 Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

PASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 30.0...40.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7.10...7.60

Speed rpm : 2200

4th rack travel in: 2500

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Speed

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.3	+ Del.quantity cm3/: 39.541.5 + 1000 s: (38.542.5)
Testing:	+ Spread cm3 : 2.50 + 1000 s: (3.00)
Speed rpm : 250	+ Aneroid pressure h: 1100
Minimum rack trave: 9.20	+ Speed rpm : 500
Speed rpm : 350	+ Del.quantity cm3/: 34.536.0 *
Rack travel in mm: 5.205.40	+ 1000 s: (33.537.0)*
Speed rpm : 1000	+ Spread cm3 : 2.50
Maximum rack trave: 1.50	+ 1000 s: (3.00)
	+ Aneroid pressure h: 1100
SET IDLE AUXILIARY SPRING	+ Speed rpm : 800
Speed rpm : 380	+ Del.quantity cm3/: 36.538.0 **
Rack travel in mm: 4.24.4	1000 s: (35.539.0)*
: (4.14.5)	+ Spread cm3 : 2.50
	1000 s. (3.00)
TORQUE CONTROL	1000 3. (3.80)
Torque control curve - 1st version	1
1st speed rpm : 1000	+ STARTING FUEL DELIVERY
Rack travel in m: 12.1012.20	3 MINITIAG FOLL DELIVENT
2nd speed rom: 1400	I
Rack travel in m: 12.1012.40	Speed rpm : 100
3rd speed rpm : 2000	Del.quantity cm3/: 52.00.0
Rack travel in m: 11.6011.90	
4th speed rpm : 500	1000 s: (52.00.0)
Rack travel in m: 12.212.4 *	+ Rack travel in mm : 20.100.00
5th speed rpm : 800	T WAR TOLE
Rack travel in m: 12.412.6 **	+ HIGH IDLE
Rack travet in m: 12.412.0 **	1
0.0000000d (01 + 5+1 - 1-	† 1st version
Aneroid/Altitude	+ Aneroid pressure h: 1100
Compensator Test	+ Speed rpm : 2200
	- Rack travel in mm : 7.107.60
4-1	+ Del.quantity cm3/: 22.026.0
1st version	1000 s: (21.027.0)
Setting	+ Spread cm3 : 2.50
Speed rpm : 1000	† 1000 s: (3.00)
Pressure hPa : 950	†
Rack travel mm : 0.000.20	+ LOW IDLE
••	+
Measurement	Speed rpm: 350
Speed 1/min: 1000	+ Rack travel in mm : 5.205.40
4	† Del.quantity cm3/: 5.06.0
1st pressure hPa : 900	+ 1000 s: (4.59.0)
Rack travel in m: 0.500.70	+ Spread cm3 : 1.00
2nd pressure hPa : 750	+ 1000 s: (1.50)
Rack travel in m: 1.802.20	+
	+ SETTING PNUEUMATIC FAST IDLE
FUEL DELIVERY CHARACTERISTICS	+ (ELA)
	+
	+
1st version	+ Speed rpm : 400
Aneroid pressure h: 1100	+ Rack travel in mm : (5.47.0)
Speed rpm : 1400	<pre>Del.quantity cm3/:-</pre>
Del.quantity cm3/ : 38.039.5	1000 s: (5.013.0)
1000 s: (37.048.5)	Vacuum hPa : 400
Spread cm3 : 2.50	+
1000 s: (3.0)	+ Remarks:
Aneroid pressure h: 1100	÷ :
Speed rpm : 2000	+

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 p Test sheet Edition : 15.01.93 Replaces : 03.08.90 Test oil : ISO-4113 Combination no. : 0 402 036 733 Injection pump Pump designation : PES6P120A720/3LS3247 EP type number : 0 412 026 735 Governor Governor design. : RQV300...1100PA876-4 : 0 421 813 851 Governer no. Customer-spec. information Customer : MAN : D2866LXF/ADG Engine 1st version kw : 273.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

x Wall thickness
x Length mm : 6.00X1.50X100X

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 6 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.00...4.00 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 15.00...15.10 Del.quantity cm3/: 24.2...24.4 100 s: (23.9...24.7) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 1145 travel mm : 8.30...8.50 2nd speed : 300 rpm : 1.10...1.30 travel mm 3rd speed : 500 rpm travel mm 2.90...3.50 4th speed : 900 rpm 5.90...6.30 travel mm 5th speed : 1450 rom : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1200 Del.quantity : 242.0...244.0 1000 : (239.0...247.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED ist version Control lever position degrees: 298...306 Testing: 1st rack travel in: 13.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1260...1290 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 259...267 Testing: Speed rpm : 200 Minimum rack trave: 6.50 rpm : 300 Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 320...430 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.50...14.60 2nd speed rpm : 700 Rack travel in m: 15.00...15.10 3rd speed rpm : 950 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version

1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 14.00...14.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1100 Del.quantity cm3/: 230.0...236.0 1000 s: (227.0...239.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.60 rpm : 1140...1150 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

: MAN-NR. 2-7890

Measurement

Setting

Speed

Speed 1/min: 500

rom

Pressure hPa : 1200 Rack travel mm : 15.00...15.10

: 500

F17

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 18.12.92 Replaces : 10.92 Test oil : ISO-4113 Combination no. : 0 402 648 907 Injection pump Pump designation : PE8P120A320LS7839-10 EP type number : O 412 628 855 Governor Governor design. : RQV300...950PA797-22 Governer no. : 0 421 813 909 Customer-spec. information : MERCEDS-BENZ Customer Engine : 0M442 LA 1st version kW : 370.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly **Opening** pressure, bar : 207...210 : 1 680 750 075 Test lines Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm : 5.00...5.10 : (4.95...5.15) Rack travel in mm: 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order 4-1 Phasing : 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm:550Rack travel in mm : 15.10...15.30 Del.quantity cm3/: 26.5...26.7 100 s: (26.2...27.0) Spread cm3 : 0.6100 s: (0.9) rpm : 300.02nd speed Rack travel in mm:: 6.0...6.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.6100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.50 travel mm rpm : 617 2nd speed : 5.00...5.50 travel mm rpm : 780 3rd speed travel mm : 6.10...6.60 4th speed rpm : 1010 : 8.30...8.80 travel mm 5th speed : 1092 rpm : 9.80...10.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 550

Aneroid pressure h: 900 : 265.0...267.0 Del.quantity 1000 : (262.0...270.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 15.00 rpm : 990...1000 Speed 2nd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel in: 1200 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm : 200 Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.20...6.40 CONSTANT REGULATION Speed rpm : 300...400 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 400 hPa : 900 Pressure : 15.10...15.30 Rack travel mm Measurement Speed $1/\min : 400$ 1st pressure hPa : 250 Rack travel in m: 10.00...10.20 2nd pressure hPa : 550 Rack travel in m: 12.80...12.90 3rd pressure hPa : 1100 Rack travel in m: 15.20...15.40 * 4th pressure hPa : 1300 Rack travel in m: 15.60...15.70 5th pressure hPa : -Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000 Speed rpm : 950

Speed npm : 950 Del.quantity cm3/ : 281.0...284.0

1000 s: (278.0...287.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 275.0...295.0

1000 s: (271.0...299.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

respect to setting at least 0.1 mm

F19

Speed

START CUT-OUT

1/min: 240 (260)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VWW Edition : 15.01.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R328-3 : 0 460 494 258 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine : 086T-1.6 LLK

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Openina |

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250 Charge press. hPa: 750

Setting value mm: 3.00...3.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250 Charge press hPa: 750

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 750

Del. quantity cm3/ 1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.5 1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700

Del. quantity cm3/

1000s.: 26.50...27.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

100US.: 9.00...11.00

Shutoff

electromagnet Volt: 12.0 Del. quantity cm3/: 2.5 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550

Del. quantity cm3/

1000s.: 2.00...3.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2525 Speed Charge press hPa: 750

Del. quantity cm3/

1000s.: 13.00...17.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 35.00...85.00

1000s.: 35.00

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 2250 Charge press. hPa: 750 Load-dependent start of delivery: Inj.-qty.dif.measurement: Supply-pump Speed 1/min: 1250 bar: 7.70...8.30 pressure Inj.—qty. cm3/Shutoff difference 1000S.: 7.00...9.00 # electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: SP press.-dif.measurement pompa di mandata (FP) 1/min: 700 1st speed 1. Speed 1/min: 1250 Shutoff Supply pump electromagnet Volt: 12 pressure : 41.70...83.40 Overflow quantity cm3/10s: (27.80...97.30) 2nd speed 1/min: 2250 Charge press. hPa: 750 difference bar: 0.10...0.30# Shutoff electromagnet Volt: 12.0 Shutoff Inspection-pump test specifications electromagnet Volt: 12 Test specifications in parentheses : 55.60...152.90 cm3/10s: (41.70...166.80) Overflow quantity Timing-device characteristic: Delivery-quant. and breakaway char.: 1st speed 1/min: 2250 hPa: 750 mm: 7.00...7.80 Charge press TD travel 1nd speed 1/min: 900 mm: (6.70...8.10) Charge-air pressure-setting electromagnet Volt: 12 2nd speed 1/min: 2000 hPa: 300* LDA-stroke mm: 5.5 Charge press hPa: 750 Shutoff TD travel mm: 6.40...7.20 electromagnet Volt: 12 Del. quantity cm3/: 33.00...34.00 1000s.: (30.50...36.50) 2nd speed 1/min: 2650 Charge press. hPa: 750 Shutoff mm: (6.10...7.50) Shutoff electromagnet Volt: 12 1/min: 1250 s hPa: 750 mm: 3.00...3.40 3rd speed Charge press TD travel electromagnet Volt: 12 mm: (2.50...3.90) Del. quantity cm3/: 0.00...6.00 Shutoff 1000s.: (0.00...6.00) electromagnet Volt: 12 1/min: 2525 5th speed 4th speed 1/min: 1000 Charge press. hPa: 750 Charge press hPa: 750 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 13.00...17.00
1000S.: (11.00...19.00)
8th speed 1/min: 2425 mm: 1.70...2.50 TD travel mm: (1.40...2.80) Shutoff electromagnet Volt: 12 Charge press. hPa: 750 Supply-pump pressure characteristic: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 26.50...36.50 1000s.: (25.50...37.50) 9th speed 1/min: 2250 1st speed 1/min: 700 Charge press. hPa: 750 Supply-pump Charge press. hPa: 750 Shutoff pressure bar: 3.30...3.90 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press. hPa: 750 Supply-pump pressure bar: 4.90...5.50 Charge press. hPa: 750 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quyntity_cm3/: 42.0043.00 -	
1000s.: (40.3044.70)	1st speed 1/min: 1250
14th speed 1/min: 600	Injqty. cm3/ : 9.013.0
Charge press. hPa:	difference 1000S.: - Shutoff
electromagnet Volt: 12	electromagnet Volt: 12
Del. quantity cm3/: 25.0030.00	3rd speed 1/min: 1250
1000s.: (22.532.50)	Injqty. cm3/: MAX. 3.00 "
18th speed 1/min; 700	difference 1000s.: -
Charge press. hPa: 750 - Shutoff	Th Annual differentiation
electromagnet Volt: 12	TD-travel dif.measurement: correttore anticipo iniezione (SV):
Del. quantity cm3/: 34.037.0	- 1st speed 1/min: 1250
1000s.: (32.538.5)	T0-travel : 0.600.80
-	difference mm: -
Mech. shutoff:	Shutoff
·	electromagnet Volt: 12.0
Electr. shutoff:	- 2nd speed 1/min: 1250
1-h 1	TD-travel : 1.001.40 "
1st speed 1/min: 425	difference mm: -
Del. quantity cm3/: 0.003.00 - 10000s.: (0.003.00)	Shutoff
Shutoff	electromagnet Volt: 12
electromagnet volt: -	SP press.—dif.measurement:
-	pompa di mandata (FP):
Damper set qty.:	1st speed 1/min: 1250
	- Supply pump-
LFG-setting:	pressure : 0.601.00 "
solidate con carcassa:	difference bar: -
Idle delivery:	Shutoff
1st speed 1/min: 425	electromagnet Volt: 12
Shutoff	Automatic starting fuel delivery:
electromagnet Volt: 12	- nationalise starting rules decivery.
Del. quantity cm3/: 9.0011.00	1st speed 1/min: 150
1000s.: (4.5015.50)	- Shutoff
	electromagnet Volt: 12
High Idle:	Pel. quantity cm3/: 35.0085.00
1ot enough 1/-: 525	1000s.: (35.00,85.00)
1st speed 1/mi: 525 Shutoff	2nd speed 1/min: 350
electromagnet Volt: 12	- 2nd speed 1/min: 350 - Shutoff
Del. quantity cm3/: 9.0011.00	electromagnet Volt: 12
1000s.: (5.0015.00)	Del. quantity cm3/: 17.0037.00
	1000s.: (17.0037.00)
Residual:	-
1.0-1	- 4th speed 1/min: 100
1.Rotacao 1/min: 550	- Shutoff
Shutoff	electromagnet Volt: 12
electromagnet Volt: 12 Bel. quantity cm3/: 2.003.00	- Del. quantity cm3/: 35.0085.00 - 1000s.: (35.0085.00)
1000s.: (0.005.50)	[(35.00,65.00)
2nd speed 1/min: 500	- Shutoff electromagnet:
Shutoff	- State Calculating
electromagnet Volt: 12	- Cut-in
Del. quantity cm3/: 2.504.50	min voltage : 10.0
1000s.: (0.007.00)	- Rated voltage : 12.0
Load-danandant atout at data	Managaran and the first of
Load-dependent start of delivery:	- Mounting and assembly dimensions:

Designation

K KF

mm: K1 mm: 5.6...6.0 mm: 1.3...1.5 mm: 5.5 MS

LDA stroke

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test scheet : VWW

Edition : 15.01.93

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R270-1 : 0 460 494 269

Type number

Customer Part-No. :

Customer-specific information

Customer

Engine : 068.4-1.61 Caddy

TEST BENCH REQUIREMENTS

Calibrating oil

return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

assembly : 1 688 901 000

Cpening.

Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00

x Wall thickness : 2.00

x Length mm: 840

Start of delivery

Prestroke mm: -(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 2.10...2.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed

1/min: 1250

Setting value bar: 4.90...5.50

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

cm3/: 2.5 Dispersion

1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/ 1000s.: 28.5...29.5

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2,5

1000s.: (3.0)

Low-idle speed regulation

1/min: 375

Del. quantity cm3/

1000s.: 11.0...13.0

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 2.0

1000s.: (3.0)

Residual-Delivery Setting

1/min: 550 Speed

Del. quantity cm3/

1000s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475

Del. quantity cm3/

1000s.: 14.00...18.00

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed

Inj.-qty. cm3/

difference 1000s.: 6.50...12.50 #

F24

Shutoff		+		55.60152.90
electromagnet Volt:		+	quantity cm3/10s:	(41.70166.80)
TD-travel dif.measu		†		
correttore anticipo		†	Delivery-quant. and	breakaway char.:
1. Speed 1/min:	1250	†		
TD-travel	0.40 0.00.4	†	2.1	0770
	0.600.80 #	†	2nd speed 1/min:	2/00
Shutoff	42	†	Shutoff	40
electromagnet Volt:	12	†	electromagnet Volt:	
Toomantion		†	Del. quantity cm3/:	
Inspection-pump tes		†		(0.006.00)
Test specifications	in parentheses	†	5th speed 1/min:	2415
Timing device character	ntaniatio.	†	Shutoff	42
Timing device charac	cteristic:	T	electromagnet Volt:	1/ 00 10 00
2nd speed 1/min:	ววรถ	T	Del. quantity cm3/:	(42.0010.00
	6.507.30	Ť		(12.0020.00)
	(6.207.50)	T	8th speed 1/min:	2400
Shutoff	(0.207.50)	T	Shutoff	15
electromagnet Volt:	13	7	electromagnet Volt:	
3rd speed 1/min:		1	Del. quantity cm3/:	
	2.102.50	T		(17.0029.00)
	(1.603.00)	T	9th speed 1/min: Shutoff	2230
Shutoff	(1.005.00)	T		12
electromagnet Volt:	12	T	electromagnet Volt:	12 27 EO 20 EO
4th speed 1/min:		T	Del. quantity cm3/:	(26.3030.70)
	0.901.70	Ι	10th speed 1/min:	
	(0.602.00)	Ι	Shutoff	1000
Shutoff	(0.002.00)	I	electromagnet Volt:	10
electromagnet Volt:	12	I		
etectionagnet vott.	12	T	Del. quantity cm3/:	
Supply-pump pressure	a characteristic:	T.	10005.1	(26.831.2)
ייים אייים אייים אייים	character factor.	1	Mech. shutoff:	
1st speed 1/min:	600	1	recii. Shulbii.	
Supply-pump	300	1	Electr. shutoff:	
	3.003.60	1	eteeti. Silatoii.	
Shutoff	3.663.66	1	1st speed 1/min:	425
electromagnet Volt:	12	1	Del. quantity cm3/:	
2nd speed 1/min:		1		(0.003.00)
Supply-pump		1	Shutoff	(0.005.00)
	4.905.50	1	electromagnet volt:	
Shutoff		1	accor. omagnet vote.	
electromagnet Volt:	12	1	Damper set qty.:	
3rd speed 1/min:		+	and do do	
Supply-pump		+	LFG-setting:	
	7.708.30	+	solidate con carcas	sa:
Shutoff		+	Idle delivery:	
electromagnet Volt:	12	+		
_		+	1st speed 1/min:	375
Overlow quantity at	overflow valve:	+	Shutoff	
•		+	electromagnet Volt:	12
1st speed 1/min:	600	+	Del. quantity cm3/:	
Shutoff		+		(8.0016.00)
electromagnet Volt:		+	2nd speed 1/min:	
Overflow :	41.7083.40	+	Shutoff	
	(27.8097.30)	+	electromagnet Volt:	12
2nd speed 1/min:	2250	+	Del. quantity cm3/:	5.508.50
Shutoff		+	1000s.:	(3.0011.00)
electromagnet Volt:	12	+	Dispersion cm3/:	2.0
		+	1000s.:	(3.0)

1/min: 380 2nd speed High Idle: Shutoff. electromagnet Volt: 12 Del. quantity cm3/: 10.00...30.00 1000s.: (10.00...30.00) 1st speed 1/mi: 525 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) Residual: 1/min: 550 1.Rotacao Shutoff Shutoff electromagnet: electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00) Cut-in min voltage : 10.0 1/min: 500 2nd speed Rated voltage : 12.0 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 3.20...5.20 1000\$:: (1.70...6.70) Mounting and assembly dimensions: Designation mm: 3.2...3.4 K Load-dependent start of delivery: KF mm: 5,6...6.0 Inj.-qty.dif.measurement: MS mm: 1.2...1.6 1/min: 1250 3rd speed Remarks: Inj.-qty. cm3/: MAX. 3.00 " Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 1.40...1.80 " difference Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pumppressure : 1.10...1.50 " Shutoff electromagnet Volt: 12.0 1/min: 1250 3rd speed Supply pump-: 1.10...1.50 pressure bar: (0.90...1.70) difference Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 640 101AA Injection pump Pump designation : PE12A95D61DLS2453 EP type number : 0 410 690 998 Governor Governor design. : RQV300...1150AB1056D : 0 420 214 245 Governer no. Customer-spec. information Customer : KHD Engine : BF12L413FW 1st version kW : 277.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 9.00...%.00 Firing order: 1-4-9-8-5-2-11-10-3-6-7-12 Fhasing : 0-15-60-75-120-135-180-195-240-255-300-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 9.4...9.6 100 s: (9.2...9.8) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7 100 s: (0.8...1.9) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1150 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 700 Del.quantity : 94.0...98.0) 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testina: 1st rack travel in: 9.40 rpm : 1190...1200 Speed 2nd rack travel in: 4.00

Prestroke mm

Speed rpm : 1235...1265 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed nom : 310...380

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.50...10.60

2nd speed rpm : 775
Rack travel in m: 10.50...10.60

3rd speed rpm : 930

Rack travel in m: 10.70...10.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed ripm : 500 Pressure hPa : 700

Rack travel mm : 10.50...10.60

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.30...10.40 2nd pressure hPa : 329 Rack travel in m: 10.60...10.70 3rd pressure hPa : 280

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 775

Del.quantity cm3/: 98.5...101.5

1000 s: (96.0...104.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 77.0...79.0 1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 14.40...14.60

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

F28

Note remarks

Test sheet

: KHD Edition : 21.09.92

Reptaces

: ISO-4113 Test oil

Combination no. : 0 400 640 113AH

Injection pump

Pump designation : PE12A95D61OLS2453 EP type number : 0 410 690 998

Governor

Governor design. : RQV300...1250AB1223L

Governer no. : 0 420 212 092

Customer-spec. information Customer : KHD

Engine : F12L413F

1st version kW : 254.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 8.7...8.9

100 s: (8.5...9.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200

travel mm : 0.70...0.80

rpm : 500 2nd speed

: 2.60...2.80 travel mm

3rd speed : 900 rpm

: 5.60...5.80 travel mm

4th speed : 1300 CDM

travel mm : 8.60...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1275 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 8.60

rpm : 1290...1300 Speed

2nd rack travel in: 4.50

Speed rpm : 1340...1370 4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 80...88

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 375...485 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 9.60...9.70

2nd speed rpm : 650

Rack travel in m: 10.10...10.20

3rd speed rpm : 850 Rack travel in m: 9.80...10.00

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 84.5...87.5 1000 s: (82.0...90.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 13.50...14.20

Remarks:

G02

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-6-5-4-3-2 Firing order Note remarks Test sheet : KHD Edition : 29.11.91 Phasing : 0-75-120-195-240-315 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 646 279 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6A95D41OLS2621 EP type number : 0 410 696 982 1st speed rpm: 1150 Governor Governor design. : RQV350...1150AB1195-Rack travel in mm : 9.30...9.40 1L Governer no. : 0 420 212 231 Del.quantity cm3/ : 7.6...7.7 Customer-spec. information 100 s: (7.4...7.9) Customer : KHD cm3 : 0.3Spread Engine : F6L413F 100 s: (0.6) 1st version kW : 141.0 : 2300 Rated speed rpm : 350.02nd speed Rack travel in mm: 6.9...7.1 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.1...1.7 100 s: (0.8...1.9) Test oil cm3 : 0.3Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve (B) Setting of injection pump : 1 419 992 198 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Test nozzle holder travel mm : 1.10...1.50 assembly : 0 681 343 009 2nd speed rpm : 370 : 1.40...1.90 travel mm Opening. 3rd speed : 420 rpm pressure, bar : 172...175 2.30...2.80 travel mm 4th speed 770 rpm travel mm : 4.70...5.20 Test lines : 1 680 750 014 5th speed : 1200 rpm : 8.30...8.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X2.00X600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1290 Speed Insp. values in parentheses Rack travel in mm : 7.00...9.60 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1150 Del.quantity : 76.5...77.5 Prestroke mm : 2.00...2.10 1000 : (74.5...79.5)

: (1.95...2.15)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 8.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270

LOW IDLE 1 Control lever

position degrees: 84...92

Testina:

Speed rpm : 200 Minimum rack trave: 11.20 rpm : 350 Speed

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00 Speed : 440...500 rom

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.30...9.40

2nd speed rpm : 500

Rack travel in m: 10.10...10.20

3rd speed rpm : 800

Rack travel in m: 9.80...10.00

4th speed rpm : 1000

Rack travel in m: 9.50...9.60

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed mom : 650

Del.quantity cm3/ : 75.0...77.0

1000 s: (72.5...79.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1190...1200 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0

1**000** s: (117.0...133.0)

Rack travel in mm : 15.20...15.60

Remarks:

: WARDAM

GO4

BOSCH INJ. PURE TEST SPECIFICATIONS Note remarks Test sheet : MAN Edition : 18.12.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 648 131 Injection pump Pump designation : PE8A95D320LS2421 EP type number : 0 410 698 994 Governor Governor design. : RQ750AB1155R Governer no. : C 42C 201 627 Customer-spec. information : MAN Customer Engine : D2538 MTE TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening : 172...175 pressure, bar Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Prestroke mm : 1.70...1.80

: (1.65...1.85)

4-1

: 8-7-2-6-3-5-

Rack travel in mm : 9.00...12.00

270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.40...13.50 Del.quantity cm3/: 13.3...13.5 100 s: (13.1...13.7) Spread cm3 : 0.3rpm : 250.02nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) cm3 : 0.3Spread FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 : 133.5...135.5 Del.quantity 1000 : (131.5...137.5) Spread cm3: 3.00 RATED SPEED 1st version Testing: 1st rack travel in: 12.40 rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 775...785 4th rack travel in: 795 Speed rpm : 0.00...1.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.40 Speed rpm : 750...755 Remarks: APPLICATION Generator set

Phasing

: 0-45-90-135-180-225-

Firing order

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 31.07.92 Replaces Test oil : ISO-4113 : 0 400 678 038 Combination no. Injection pump Pump designation : PE8A95D410LS2451 EP type number : 0 410 698 992 Governor Governor design. : RSV300...1000A7C1002 : 0 420 232 309 Governer no. Customer-spec. information Customer : KHD Engine : F8L413F 1st version kW : 147.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Cverflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15) Rack travel in mm : 9.00...12.00 Firing order : 1-8-7-2-6-5-

Phasing : 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 9.10...9.20

Del.guantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.1...1.8 100 s: (0.8...2.0)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30. .1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 79.5...81.5 1000 : (77.5...83.5)

Spread : 3.00 cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 64...72

Testing:

1st rack travel in: 8.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1150

rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 24...32 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.5 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 300 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 420...510 LDU TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 9.10...9.20 1st speed 2nd speed rpm : 400 Rack travel in m: 9.70...9.80 3rd speed rom : 700 Rack travel in m: 9.40...9.50 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 700 Del.quantity cm3/: 80.5...83.5 1000 s: (78.5...85.5) full load rack tr: 8.10 rpm : 1040...1050

BREAKAWAY

1st version 1mm rack travel less than

Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 116.5...126.5 1000 s: (113.5...129.5)

Rack travel in mm : 14.20...14.60

Remarks:

608

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order Note remarks Test sheet : KHD Edition : 21.08.92 Replaces Phasing : ISO-4113 Test oil Combination no. : 0 400 678 040 Injection pump Pump designation : PE8A95D410LS2608 EP type number : 0 410 698 988 Governor 1st speed Governor design. : RSV300...1325A8C1002 : 0 420 232 310 Governer no. Customer-spec. information Customer : KHD Engine : F8L413F Spread 1st version kW : 188.0 Rated speed : 2650 2nd speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Spread Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 1st version Speed Del.quantity Test lines : 1 680 750 014 Spread Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. per values ___ Testing: BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10

: (1.95...2.15)

: 1-8-7-2-6-5-: 0-45-90-135-180-225-270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1325Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 9.1...9.3 100 s: (8.9...9.5) cm3 : 0.3100 s: (0.6) rpm : 300.0Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7) cm3 : 0.5100 s: (0.9) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1325 91.5...93.5 1000 : (89.5...95.5) cm3 : 3.00 1000 : (6.00) Control Lever position degrees: 109...117 1st rack travel in: 8.70 Speed rpm : 1365...1375 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 4th rack travel in: 1575

Prestroke mm

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 66...74 Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm: 300
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 310...370 : 700 Speed rpm Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1325 Rack travel in m: 9.70...9.80 rpm : 500 2nd speed

Rack travel in m: 10.00...10.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70 rom : 1365...1375 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 116.5...127.5 1000 s: (113.5...130.5)

Rack travel in mm : 14.00...14.40

HIGH IDLE

1st version

Rack travel in mm : 3.90...4.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 3,8 g 2 : 27.11.92 Edition : 09.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 844 047 Injection pump Pump designation : PES4A90D410RS2294 EP type number : 0 410 894 011 Governor Governor design. : RQV300...1425AB740L : 0 420 212 037 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 314 1st version kW : 62.5 Rated speed : 2850 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.15...2.25 Prestroke mm : (2.10...2.30) Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1400 Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 6.2...6.3 100 s: (6.0...6.5) cm3 : 0.3Spread 100 s: (0.4) rpm : 300.02nd speed Rack travel in mm: 7.2...7.4 Del.quantity cm3/ : 0.9...1.5 100 s: (0.7...1.7) Spread cm3 : 0.2100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1460 : 8.40...8.60 travel mm 2nd speed rpm : 950 : 5.20...5.50 travel mm 3rd speed rpm : 775 : 4.10...4.60 travel mm rpm : 550 4th speed : 2.70...3.00 travel mm rpm : 3005th speed travel mm : 0.70...1.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1420Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1400 Del.quantity : 62.5...63.5 1000 : (60.5...65.5) Spread cm3 : 3.00 1000 : (4.50) RATED SPEED

1st version Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 8.70

rpm : 1455...1465 Speed

2nd rack travel in: 4.00

Speed rpm : 1535...1565 4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 66...74

Testing:

Speed rpm : 100Mirrimum rack trave: 8.80

Speed rpm : 300 Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 71.0...81.0 1000 s: (68.0...84.0)

Rack travel in mm : 13.70...14.30

Remarks:

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 a 11 : 27.11.92 Edition Replaces : 09.92 Test oil : ISO-4113 : 0 400 844 091 Combination no. Injection pump Pump designation : PES4A90D410RS2666 EP type number : 0 410 894 029 Governor Governor design. : RQV300...1400AB1065-12L : 0 420 212 207 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : 0M364 Engine : 61.0 1st version kW Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.25...2.35

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 4- 2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1400 1st speed Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 5.9...6.0 100 s: (5.7...6.2) Spread cm3 : 0.3 100 s: (0.5) 2nd speed rpm : 300.0Rack travel in mm: 8.6...8.8 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4) Spread cm3 : 0.2100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 0.80...1.30 travel mm 2nd speed rpm : 500 travel mm : 2.30...2.80 3rd speed rpm : 750 travel mm : 4.10...4.30 : 1500 4th speed rom : 8.50...8.60 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1400 Speed : 59.0...60.0 Del.quantity 1000 : (57.0...62.0) : 3.00 Spread cm3 1000 : (5.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testina:

1st rack travel in: 9.50

Prestroke mm

rpm : 1440...1450 Speed

2nd rack travel in: 4.00

Speed rpm : 1535...1565

4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 72...80

Testing:

rpm : 100 Speed Minimum rack trave: 10.20 rpm : 300

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

rpm : 540...680 Speed

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.50...10.60

2nd speed rpm : 475

Rack travel in m: 11.50...11.60

3rd speed rpm : 850

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 475 Del.quantity cm3/ : 45.0...47.0

1000 s: (42.5...49.5)

Speed rpm : 850

Del.quantity cm3/: 47.5...50.5

1000 s: (45.0...53.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

G14

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 j 1 : 21.01.93 Edition 3 : 04.92 Replaces Test oil : ISO-4113

Combination no. : 0 400 844 096

Injection pump

Pump designation : PES4A95D410RS2809 EP type number : 0 410 894 993

Governor

Governor design. : RQV300...1400AB1065-

23L

: 0 420 212 227 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.5...8.7

Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750 travel mm

: 4.10...4.30

: 1500 4th speed rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1400 rpm

: 64.5...66.5 Del.quaritity : (62.5...68.5) 1000

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 111...119

Testina:

1st rack travel in: 8.90

Speed rpm : 1450...1460

2nd rack travel in: 4.00

Speed rpm : 1535...1565

4th rack travel in: 1670

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 73...81

Testina:

rpm : 100 Speed Minimum rack trave: 9.60 rpm : 300 Speed

Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

Speed rpm : 550...700

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 11.10...11.20

3rd speed rpm : 630

Rack travel in m: 10.70...11.00

4th speed rpm : 925

Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400

Del.quantity cm3/: 49.0...53.0

1000 s: (46.5...55.5)

Speed rpm : 630 Del.quantity cm3/ : 51.5...55.5

1000 s: (49.0...58.0)

Speed rpm : 925

Del.quantity cm3/: 57.0...61.0

1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm: 14.40...14.80

Remarks:

G16

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : MB 5,7 v 10 : 27.11.92 Test sheet Edition Phasing : 0-60-120-180-240-300 : 09.92 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 846 493 BASIC SETTING Injection pump 1st speed rpm : 1400Pump designation : PES6A90D410RS2596 EP type number : 0 410 896 073 Rack travel in mm : 11.90...12.00 Governor Governor design. : RQV300...1400AB1120-Del.quantity cm3/: 7.3...7.4 1L : 0 420 212 157 Governer no. 100 s: (7.1...7.6) Customer—spec. information Spread cm3 : 0.3Customer : DAIMLER-BENZ 100 s: (0.4) : 0M352A Engine 2nd speed rpm : 300.0 Rack travel in mm : 8.5...8.7 : 124.0 1st version kW Rated speed : 2800 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) TEST BENCH REQUIREMENTS cm3 : 0.2Spread 100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -1 : 1 419 992 198 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder : 0 681 343 009 assembly 1st version Speed rpm : 1400 **Opening** Aneroid pressure h: 700 pressure, bar : 172...175 Del.quantity : 73.0...74.0 1000 : (71.5...76.5) cm3 : 3.00 Spread Test lines : 1 680 750 014 1000 : (4.50) Outside diameter RATED SPEED x Wall thickness x Length mm : 6.00x2.00x600 1st version Control lever (A) Injection pump setting values position degrees: 111...119 Insp. values in parentheses Set equal delivery quant. Testing: per values 1st rack travel in: 10.90 rpm : 1440...1450 Speed BEGINNING OF DELIVERY 2nd rack travel in: 4.00 Test pressure, bar: 25...27 rpm : 1570...1600 Speed 4th rack travel in: 1750

rpm : 0.00...1.00

Speed

Prestroke mm

: 2.00...2.10

: (1.95...2.15)

LOW IDLE 1 Control lever

position degrees: 70...78

Testing:

Speed : 100 rpm Minimum rack trave: 10.10 rpm : 300 Speed

Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

rpm : 590...660 Speed

TORQUE CONTROL

Dimension a mm : 1.10

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 11.90...12.00

2nd speed rpm : 500

Rack travel in m: 13.00...13.10

3rd speed rpm : 1000

Rack travel in m: 12.70...12.90 4th speed rpm : 1200

Rack travel in m: 12.10...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 hPa : 700 Pressure

Rack travel mm : 13.00...13.10

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.90...12.00 2nd pressure hPa : 320

Rack travel in m: 12.70...12.80

3rd pressure hPa : 220

Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 500

Del.quantity cm3/: 67.5...69.5 1000 s: (65.5...71.5)

Aneroid pressure h: -

Speed rpm -: 500 Del.quantity cm3/ : 56.0...58.0

1000 s: (54.0...60.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 72.0...82.0 1000 s: (69.0...85.0)

Rack travel in mm : 14.90...15.30

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks Test sheet : KHD 6,1 p : 27.11.92 Edition Phasing : 0-60-120-180-240-300 : 09.92 Replaces Test oil : ISO-4113 Tolerance + - " : 0.50 (0.75)Combination no. : 0 400 846 549 BASIC SETTING Injection pump 1st speed rpm: 1250 Pump designation : PES6A95D41ORS2471 EP type number : 0 410 896 952 Rack travel in mm : 11.60...11.70 Governor Governor design. : RQV300...1250AB1089--Del.quantity cm3/: 10.1...10.3 2L Governer no. : 0 420 212 190 100 s: (9.9...10.5) Customer-spec, information Spread cm3 : 0.3Customer 100 s: (0.6) Engine : BF6L913C 2nd speed rpm : 300.0 Rack travel in mm : 7.2...7.4 : 141.0 1st version kW Rated speed : 2500 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Inlet press., bar: 1.50 : 1.30...1.40 travel mm 2nd speed rpm : 650 Test nozzle holder travel mm : 3.70...3.90 : 0 681 343 009 assembly 3rd speed : 1200 rpm : 6.90...7.10 travel mm Opening 4th speed 1290 rom pressure, bar : 172...175 travel mm : 8.40...8.50 GUIDE SLEEVE POSITION Test Lines : 1 680 750 014 Control-lever position Degree: -1 Outside diameter rpm : 1290 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Lerigth mm : 6.00X2.00X600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1250 per values Del.quantity : 101.0...103.0 1000 : (99.0...105.0) BEGINNING OF DELIVERY cm3 : 3.50 Spread Test pressure, bar: 25...27 1000 : (6.00): 1.90...2.00 Prestroke mm RATED SPEED

: (1.85...2.05)

1st version

Control Lever

position degrees: 118...126

Testing:

1st rack travel in: 10.60

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

Speed rpm : 1345...1375 4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 69...77

Testing:

Speed rpm : 100 Minimum rack trave: 9.00

rom

Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

rpm : 350...485 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.60...11.70

2nd speed rpm : 500

Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rom : 850

Del.quantity cm3/: 95.5...98.5 1000 s: (93.0...101.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 122.0...132.0 1000 s: (119.0...135.0)

G20

Rack travel in mm : 15.80...16.20

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: IHC Edition : 05.02.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 846 578AA

Injection pump

Pump designation : PESSA950320RS2779

EP type number

: 0 410 896 903

Governor

Governor design.

: RQV350...1200AB1236-

7R

Governer no.

: 0 420 213 119

Customer-spec, information Customer : NAVISTAR

Engine

: DT 466

1st version kW : 145.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 110

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm : 0.5

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.65...2.75 Prestroke mm

: (2.60...2.80)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350 2nd speed

Rack travel in mm : 5.3...5.5

Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.2) cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 1400

travel mm : 8.60...9.00

rpm : 1250 2nd speed

: 7.30...7.50 travel mm

rpm : 550 3rd speed

: 3.10...3.70 travel mm

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

: 97.0...99.0 Del.quantity

1000 : (95.0...101.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 41...49

Testing:

1st rack travel in: 12.10

rpm : 1255...1285 Speed

2nd rack travel in: 4.00

rpm : 1375...1385 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed rom : 100

Minimum rack trave: 9.00 rpm : 350

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

Rack travel mm : 13.10...13.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 235

Rack travel in m: 10.10...10.20

3rd pressure hPa : 520

Rack travel in m: 12.00...12.40

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 65.0...69.0

1000 s: (63.0...71.0)

BREAKAWAY

G22

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1230...1260

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0 1000 s: (125.0...175.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed

rpm : 350

Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #

: 1819484091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : RAB 9,7 e Phasing : 0-60-120-180-240-300 Edition : 21.09.92 Replaces : 10.91 Tolerance $+ - \cdot : 0.50 (0.75)$ Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 400 846 588 BASIC SETTING Injection pump Pump designation : PES6A95D420LS28U4 rpm: 10501st speed EP type number : 0 410 896 899 Governor Rack travel in mm : 12.00...12.10 Governor design. : RQ200/1050AB1246-1R Governer no. : 0 420 201 652 Del.quantity cm3/: 11.9...12.1 Customer-spec. information 100 s: (11.7...12.3) Customer : RABA cm3 : 0.3Spread Engine : D2156 HM6 UT 100 s: (0.6) 1st version kW : 162.0 Rated speed : 2100 2nd speed rpm : 200.0 Rack travel in mm: 7.4...7.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.1...1.5 100 s: (0.8,..1.7) cm3 : 0.3 Test oil Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -2 Inlet press., bar: 1.50 rpm : 500 Rack travel in mm : 19.20...20.80 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV, AT FULL LOAD STOP Openina 1st version pressure, bar : 172...175 rpm : 1050 Speed Aneroid pressure h: 700 Del.quantity : 119.0...121.0 1000 : (117.0...123.0) Test lines : 1 680 750 014 : 3.50 Spread cm3 Outside diameter 1000 : (6.00)x Wall thickness x Lenath mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm : 500 Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testina: 1st rack travel in: 11.00 : 1.80...1.90 Prestroke mm rpm : 1095...1110 Speed : (1.75...1.95) 2nd rack travel in: 4.00 Rack travel in mm : 9.00...12.00 rpm : 1125...1155 Speed

G23

LCW IDLE 1

Setting point w/out bumper spring

rpm : 200 Rack travel in mm: 6.5

Testing:

Speed : 100 rpm Minimum rack trave: 8.00 : 200 man

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

: 290...330 Speed rom

TORQUE CONTROL

Dimension a mm : 0.45

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.00...12.10

rpm : 415 2nd speed

Rack travel in m: 13.10...13.50

3rd speed rpm : 680

Rack travel in m: 12.70...13.10

rpm : 835 4th speed

Rack travel in m: 12.20...12.70

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 12.70...12.80

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 260

Rack travel in m: 12.50...12.60 3rd pressure hPa : 180 Rack travel in m: 11.10...11.40

START CUT-OUT

1/min : 140 (160) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600 Del.quantity cm3/: 111.5...114.5

1000 s: (109.0...117.0)

Aneroid pressure h: -

Speed : 500 LOW

Del.quantity cm3/: 74.0...76.0

1000 s: (72.0...78.0)

RACK STOP ADJUSTMENT

Speed rom : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...160.0 1000 s: (147.0...163.0)

Rack travel in mm : 17.50...17.70

Remarks:

Set idle stop at 200 min -1 to a control-rod travel of 6.5 mm

APPLICATION

0mnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 e Edition : 21.09.92 : 03.92 Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 597

Injection pump

Pump designation : PES6A90D410RS2813 EP type number : 0 410 896 089

Governor

Governor design. : RQV300...1250AB1264L

: 0 420 212 233 Governer no.

Customer-spec. information Customer : IVECO-FIAT

: 8065,25,000 Engine

1st version kW : 145.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 7.9...8.0

100 s: (7.7...8.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm: 8.6...8.8

Del.quantity cm3/: 1.3...1.7 100 s: (1.1...1.9)

Spread cm3 : 0.2 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.60...1.10 travel mm 2nd speed

rpm : 445 : 2.20...2.70 travel mm

3rd speed rpm : 540 : 2.80...3.30 travel mm

4th speed rpm : 897

: 5.00...5.50 travel mm

5th speed rpm : 1324

travel mm : 8.00...8.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1455

Rack travel in mm : 9.60...12.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

Del.quantity : /9.0...82.0)

Spread

cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.70

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

Speed rpm : 1415...1445 4th rack travel in: 1510

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 75...83

Testing:

beed rpm : 225

Minimum rack trave: 12.10

rpm : 325

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

rpm : 350...450 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 11.70...11.30

2nd speed rpm : 400

Rack travel in m: 13.30...13.40 d speed rpm : 700 Rack travel in m: 12.60...12.80 th speed rpm : 915

3rd speed

4th speed rpm

Rack travel in m: 11.90...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 400 Speed rom hPa : 700 Pressure

: 12.90...13.00 Rack travel mm

Measurement

Speed 1/min: 400

1st pressure hPa : -

Rack travel in m: 10.80...10.90

2nd pressure hPa : 315
Rack travel in m: 11.60...11.70
3rd pressure hPa : 280

Rack travel in m: 12.00...12.20

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 700 Speed

Del.quantity cm3/: 82.0...84.0 1000 s: (79.5...86.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 51.0...52.0

1000 s: (49.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 110.0...120.0

1000 s; (197.0...123.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

:

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : FIA Edition : 21.09.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 601

Injection pump

Pump designation : PES6A80D410RS2819 EP type number : 0 410 886 064

Governor

Governor design. : RQV300...1250AB1262-

2L

: 0 420 212 237 Governer no.

Customer-spec. information Customer : IVECO-FIAT

Engine : 8061.05.000

1st version kW : 117.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 6.0...6.1

100 s: (5.8...6.2)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 300.0Rack travel in mm: 9.0...9.2 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.5)

Spread cm3 : 0.2100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.70...1.20 travel mm

2nd speed rpm : 350

travel mm : 1.50...2.00

3rd speed rpm : 490

: 2.90...3.40 travel mm

4th speed : 850 man

5.10...5.60 travel mm

5th speed : 1290 rpm

: 8.20...8.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1390 Speed

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 60.0...61.0 Del.quantity

1000 : (58.5...62.5) Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 10.70

Speed npm : 1280...1290

2nd rack travel in: 4.00

Speed rpm : 1395...1425 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 67...76

Testing:

Speed rpm : 200 Minimum rack trave: 10.60

Speed rpm : 300

Rack travel in mm : 9.00...9.20

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

rom : 1250 1st speed

Rack travel in m: 11.70...11.80

2nd speed rpm : 350

Rack travel in m: 12.70...12.80

3rd speed rpm : 700

Rack travel in m: 12.40...12.60

4th speed rpm : 950

Rack travel in m: 12.10...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 58.5...60.5

1000 s: (56.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1280...1290 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

G28

Del.quantity cm3/: 85.0...95.0

1000 s: (82.0...98.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

:

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1- 5- 3- 6- 2- 4 Firing order Note remarks Test sheet : FIA Edition : 21.09.92 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 846 602 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A90D410RS2813 EP type number : 0 410 896 089 1st speed rpm : 1050 Governor Governor design. : RQV300...1050AB1265-Rack travel in mm : 12.60...12.70 : 0 420 212 239 Governer no. Del.quantity cm3/ : 7.5...7.6 Customer-spec. information 100 s: (7.3...7.8) Customer : IVECO-FIAT cm3 : 0.3Spread Engine : 3065.25.099 100 s: (0.4) 1st version kW : 135.0 Rated speed : 2100 rpm : 425.0 2nd speed Rack travel in mm : 8.6...8.8 TEST BENCH REQUIREMENTS Del.quantity cm3/: 0.6...1.0 100 s: (0.4...1.2) Test oil Spread cm3 : 0.2inlet temp. °C : 38...42 100 s: (0.4) Overflow valve (B) Setting of injection pump : 1 419 992 198 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 380 Test nozzle holder travel mm : 1.60...2.10 assembly : 0 681 343 009 2nd speed rpm : 430 travel mm : 2.30...2.80 Openina 3rd speed rpm : 460 pressure, bar : 172...175 travel mm : 2.60...3.10 : 740 4th speed rpm : 4.70...5.20 travel mm : 1 680 750 014 Test lines : 1110 5th speed rpm travel mm : 8.10...8.60 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x2.00x600 Control-lever position Degree: -1 Speed rpm : 1175 Rack travel in mm : 10.30...12.90 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1050 Aneroid pressure h: 700 Del.quantity : (3.0...78.0) Prestroke mm : 2.75...2.85 : (2.70...2.90)

HO1

Spread

: 3.00 cm3

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testina:

1st rack travel in: 11.60 Speed rpm : 1095...1105 2nd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1320

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 76...84

Testing:

Speed rpm : 325 Minimum rack trave: 11.00

rpm : 425

Rack travel in mm : 8.50...8.70

CONSTANT REGULATION

rpm : 550...700 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1050 Rack travel in m: 12.60...12.70

rpm : 500 2nd speed

Rack travel in m: 13.90...14.00

3rd speed rpm : 800

Rack travel in m: 13.40...13.60

4th speed rpm : 920

Rack travel in m: 12.90...13.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 700 Pressure

Rack travel mm : 13.90...14.00

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 12.00...12.10

2nd pressure hPa : 520

Rack travel in m: 13.40...13.50

3rd pressure hPa : 440

Rack travel in m: 12.40...12.70

START CUT-OUT

Speed

1/min: 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 52.0...54.0

1000 s: (50.0...56.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 100.0...110.0

1000 s: (97.0...113.0)

Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

H02

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FIA Edition : 21.09.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 846 605 Injection pump Pump designation : PES6A90D410RS2823 EP type number : 0 410 896 093 Governor : RQV300...1350AB1265-Governor design. : 0 420 212 240 Governer no. Customer-spec. information Customer : IVECO-FIAT : 8060.25.679 Engine 1st version kW : 170.0 Rated speed : 2650 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1350 Rack travel in mm : 12.70...12.80 Del.quantity cm3/: 8.1...8.2 100 s: (7.9...8.4) Spread cm3 : 0.3100 s: (0.4) rpm : 390.02nd speed Rack travel in mm : 8.8...9.0 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5) Spread cm3 : 0.2100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.50 travel mm 2nd speed rpm : 460 travel mm : 2.20...2.70 3rd speed rpm : 640 : 3.20...3.70 travel mm 4th speed rpm : 1015 travel mm : 5.80...6.30 rpm : 1390 5th speed travel mm : 8.20...8.70 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1490 Speed Rack travel in mm : 10.40...14.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1350 Speed Del.quantity : 81.0...82.0 1000 : (79.0...84.0)

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85

: (2.70...2.90)

Spread

cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.70

rpm : 1380...1390 Speed

2nd rack travel in: 4.00

Speed rpm : 1540...1570 4th rack travel in: 1540

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 69...77

Testing:

Speed rpm : 200

Minimum rack trave: 9.60

rpm : 300 Rack travel in mm: 8.80...9.00

CONSTANT REGULATION

rpm : 325...475 Speed

TORGUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 12.70...12.80 2nd speed rpm : 500 Rack travel in m: 13.70...13.80

rpm : 800 3rd speed

Rack travel in m: 13.10...13.20

4th speed rpm : 900

Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom Pressure hPa : 700

Rack travel mm : 13.70...13.80

Measurement

Speed 1/min: 500

1st pressure hPa :-

Rack travel in m: 11.60...11.70

2nd pressure hPa : 520

Rack travel in m: 12.90...13.00

3rd pressure hPa : 440

H04

Rack travel in m: 12.50...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 79.0...81.0

1000 s: (76.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1380...1390 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 145.0...155.0

1000 s: (142.0...158.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FIA : 21.09.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 400 846 607 Injection pump Pump designation : PES6A90D410RS2813 EP type number : 0 410 896 089 Governor Governor design. : RQV300...1050AB1265-3L : 0 420 212 241 Governer no. Customer-spec. information Customer : IVECO-FIAT Engine : 8065.25.099 1st version kW : 135.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.70...12.80 Del.quantity cm3/: 7.7...7.8 100 s: (7.5...8.0) cm3 : 0.3Spread 100 s: (0.4) rpm : 425.02nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 0.6...1.0 100 s: (0.4...1.2) Spread cm3 : 0.2100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 380 travel mm : 1.60...2.10 2nd speed rpm : 430travel mm : 2.30...2.80 3rd speed rpm : 460 travel mm : 2.60...3.10 rpm : 750 4th speed travel mm : 4.80...5.30 : 1130 5th speed rpm travel mm : 8.00...8.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Speed Rack travel in mm : 11.40...14.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050Aneroid pressure h: 700 Del.quantity : 77.5...78.5 1000 : (75.5...80.5)

Prestroke mm

Test pressure, bar: 25...27

: 2.75...2.85

: (2.70...2.90)

Spread cm3

: 3.00 1000 : (4.50)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testina:

1st rack travel in: 11.70

rpm : 1120...1130 Speed

2nd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1320

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 75...83

Testing:

Speed rpm : 325 Minimum rack trave: 11.00 Speed rpm: 425

Rack travel in mm: 8.40...8.60

CONSTANT REGULATION

rpm : 460...610 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.70...12.80

2nd speed rpm : 500

Rack travel in m: 14.00...14.10 3rd speed rpm : 750

Rack travel in m: 13.70...13.80 4th speed rpm : 900 Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 700 Pressure

: 14.00...14.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.70...12.80

2nd pressure hPa : 500

Rack travel in m: 13.80...13.90

3rd pressure hPa : 450

Rack travel in m: 13.20...13.50

START CUT-OUT

Speed

1/min : 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750 Del.quantity cm3/: 85.0...87.0

1000 s: (82.5...89.5)

Aneroid pressure h: -

rom : 500 Speed

Del.quantity cm3/: 65.0...67.0

1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Sceed rpm : 100

Del.quantity cm3/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF Edition : 27,11,92 : 03.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 846 608 Injection pump Pump designation : PES6A95D32ORS2796 EP type number : 0 410 896 901 Governor Governor design. : RQ300/1300AB1253-3R : 0 420 201 654 Governer no. Customer-spec. information Customer : DAF Engine : NS 156G 1st version kW : 156.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10

Rack travel in mm : 7.50...10.50

: (1.95...2.15)

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 850 Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 8.4...8.5 100 s: (8.2...8.7) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...1.0 100 s: (0.3...1.2) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 770 Rack travel in mm : 7.50...3.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 850 Aneroid pressure h: 1000 : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Setting point: Speed rpm : 770 Rack travel in mm: 8.0 Testing: 1st rack travel in: 11.60 Speed rpm : 1325...1340 2nd rack travel in: 4.00 Speed rpm : 1410...1440

Prestroke mm

4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed : 100 rom Minimum rack trave: 7.70 : 300 Speed חמרו Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 : 525...565 Speed rpm TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rom : 1290 Rack travel in m: 12.60...12.70 : 750 2nd speed rpm Rack travel in m: 14.20...14.80 3rd speed rpm : 960 Rack travel in m: 13.50...14.10 th speed rpm : 1055 4th speed Rack travel in m: 12.90...13.30 Ameroid/Altitude Compensator Test 1st version Setting Speed : 600 man hPa : 1000 Pressure : 12.80...12.90 Rack travel mm Measurement Speed 1/min : 6001st pressure hPa : -Rack travel in m: 10.90...11.10 2nd pressure hPa : 250 Rack travel in m: 12.30...12.40 3rd pressure hPa : 90 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 : 1290 Speed rpm Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: -: 600 Speed rpm Del.quantity cm3/: 45.5...46.5

1000 s: (43.5...48.5)

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.60 Speed rpm : 1325...1340 LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: **APPLICATION** Consibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 1 g 37 : 05.02.93 Edition Replaces : 05.89 Test oil : ISO-4113 Combination no. : 0 400 864 072 Injection pump Pump designation : PES4A85D410/3RS2610 EP type number : 0 410 884 951 Governor . Governor design. : RSV325...1200A2C2102 -3L : 0 420 232 508 Governer no. Customer-spec. information Customer : KHD Engine : F4L913 1st version kW : 59.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Open ina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 10.30...10.40 Del.quantity cm3/: 6.8...6.9 100 s: (6.6...7.1) cm3 : 0.3Spread 100 s: (0.4) 2nd speed rpm : 325.0 Rack travel in mm: 7.6...7.8 Del.quantity cm3/: 0.7...1.3 100 s: (0.5...1.5) cm3 : 0.2 Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.75FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed : 68.5...69.5 Del.quantity 1000 : (66.5...71.5) Spread cm3 : 3.00 1000 : (4.50) RATED SPEED 1st version Control lever position degrees: 97...105 Testina: 1st rack travel in: 9.30 Speed rpm : 1240...1250 2nd rack travel in: 4.00 rpm : 1290...1320 Speed 3rd rack travel in: 4.00

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.50...2.60

: (2.45...2.65)

rpm : 1305...1335 Speed 4th rack travel in: 1475 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 7.2 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 7.60...7.80 Rack travel in mm: 2.00 Speed rpm : 460...520 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.30...10.40 2nd speed rpm : 750 Rack travel in m: 10.70...10.80 rpm : 835 4th speed Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 59.5...61.5 1000 s: (57.0...64.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 Speed rpm : 1240...1250 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...150.0 1000 s: (137.0...153.0) Rack travel in mm : 19.50...21.00 Remarks: : FENDT **APPLICATION** Tractor (tractor engines)

H10

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 7 : 05.02.93 Edition Replaces : 01.91 Test oil : ISO-4113

Combination no. : 0 400 864 085

Injection pump

Pump designation: PES4A85D410/3RS2799

EP type number : 0 410 884 944

Governor

Governor design. : RSV325...1150A8C2239

-3L

: 0 420 232 553 Governer no.

Customer-spec. information Customer : KHD

Engine : BF4L913

1st version kW : 74.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 8.2...8.3

100 s: (8.0...8.5)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 82.0...83.0

1000 : (80.0...85.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.70

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1215,...1245 Speed

3rd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 7.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 **beea**2 rpm : 415...475 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 11.70...11.80 nd speed rpm : 500 Rack travel in m: 12.00...12.20 2nd speed 4th speed rpm : 830 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 79.5...81.5 1000 s: (77.0...84.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 Speed rpm : 1190...1200 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 17.60...18.00 Remarks:

William KS.

APPLICATION

Excavator

H12

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM Edition : 18.12.92 Replaces : 10.92 Test oil : ISO-4113

Combination no. : 0 400 864 094

Injection pump

Pump designation : PES4A90D320/3RS2743

EF type number : 0 410 894 034

Governor

Governor design. : RSV325...1150A5C505-

SR.

: 0 420 233 289 Governer no.

Customer-spec. information Customer : MWM

Engine : TD2268-4

1st version kW : 63.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.0...1.6 100 s: (0.8...1.8)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5 1000 : (69.5...74.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Testina: 1st rack travel in: 8.50 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1240 3rd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1330 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 6.2 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 Speed rpm : 415...475 TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 9.50...9.60 2nd speed rpm : 500 Rack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.50 Speed rpm : 1190...1200 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 138.0...148.0 1000 s: (135.0...151.0) Rack travel in mm : 19.50...21.00 Remarks:

APPLICATION

Excavator

H14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 11.01.93 Replaces Test oil : ISO-4113 Combination no. : 0 400 864 095 Injection pump Pump designation : PES4A95D410/3RS2789 EP type number : 0 410 894 995 Governor Governor design. : RSV325...1175A5C2163 -7L Governer no. : 0 420 232 590 Customer-spec. information Customer Engine : F4L913 1st version kW : 55.0 : 2350 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rom: 1175 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 7.4...7.6 100 s: (7.2...7.8) cm3 : 0.3Spread 100 s: (0.6) rpm : 325.0 2nd speed Rack travel in mm: 9.3...9.5 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.8) cm3 : 0.3 100 s: (0.5) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1175 Speed Del.quantity : 74.5...76.5 1000 : (72.5...78.5) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 97...105 Testing: 1st rack travel in: 10.90 rpm : 1215...1225 Speed 2nd rack travel in: 4.00

rpm : 1265...1295

Speed

3rd rack travel in: 4.00

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10

: (2.95...3.15)

rpm : 1280...1310 Speed 4th rack travel in: 1430 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 8.9 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 9.30...9.50 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve – 1st version rpm : 1175 1st speed Rack travel in m: 11.90...12.00 rpm : 800 2nd speed Rack travel in m: 12.30...12.40 3rd speed rpm : 1025 Rack travel in m: 12.10...12.20 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 69.0...72.0 1000 s: (66.5...74.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 1215...1225 STARTING FUEL DELIVERY Speed rpm : 100

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

Remarks:

: DX3.75

APPLICATION

Tractor (tractor engines)

H16

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : KHD 6,1 r : 11.01.93 Edition Phasing : 0-60-120-180-240-300 Replaces : 05.90 Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 866 125 BASIC SETTING Injection pump 1st speed rpm: 1150 Pump designation : PES6A85D410/3RS2761 EP type number : 0 410 886 895 Rack travel in mm : 12.10...12.20 Governor Governor design. : RSV325...1150A8C674-Del.quantity cm3/: 8.4...8.5 1L : 0 420 232 518 Governer no. 100 s: (8.2...8.7) Customer—spec. information Spread cm3 : 0.3Customer : KHD 100 s: (0.5) Engine : BF6L913 2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.5 1st version kW : 112.0 Rated speed : 2300 100 s: (0.7...1.7) TEST BENCH REQUIREMENTS Spread cm3 : 0.2100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 : 1 419 992 198 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 4.00assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version Speed rpm : 1150 Aneroiu ... Del.quantity 1000 Aneroid pressure h: 700 84.5...85.5 Test lines : 1 680 750 014 : (82.5...87.5) Outside diameter : 3.00 Spread cm3 x Wall thickness 1000 : (5.00) x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control lever per values position degrees: 99...107 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 11.10 rpm : 1190...1200 Speed Prestroke mm : 2.50...2.60 2nd rack travel in: 4.00

Speed

man

: 1225...1255

: (2.45...2.65)

3rd rack travel in: 4.00 rpm : 1240...1270 Speed

4th rack travel in: 1410

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 7.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 7.00...7.20

Rack travel in mm: 2.00 Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.10...12.20

2nd speed rpm : 500

Rack travel in m: 12.60...12.70 3rd speed rpm : 855

Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version Satting

Speed

: 500 rom Pressure hPa : -

Rack travel mm : 11.50...11.60

Measurement

1/min: 500 Speed

1st pressure hPa : 350

Rack travel in m: 11.90...12.00

3rd pressure hPa : 700

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750 Speed

Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 64.5...65.5

1000 s: (62.5...67.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Rack travel in mm : 17.00...17.40

Remarks:

H18

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VMA 6,0 a Edition : 21.09.92 Replaces : 01.90 Test oil : 1so-4113

Combination no. : 0 400 866 156

Injection pump

Pump designation : PES6A90D320/3RS2785

EP type number : 0 410 896 088

Governor

Governor design. : RSV350...1300A2c2242

: 0 420 233 259 Governer no.

Customer-spec. information : VM

Customer

Engine : SUN 6105 UND ..T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Pack travel in mm : 12.00...12.10

Del.quantity cm3/: 9.4...9.5

100 s: (9.2...9.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in ma : 7.2...7.4 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rom : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 94.5...95.5 : (92.5...97.5) Del.quantity 1000

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.00

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

Speed rpm : 1385...1415

3rd rack travel in: 4.00

: 1415...1445 Speed rpm

4th rack travel in: 1580 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.8

Testing:

Speed

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00 rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.00...12.10

2nd speed rpm : 550

Rack travel in m: 12.10...12.20

5th speed rpm : 400

Rack travel in m: 13.20...13.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Ceed DOG : 100

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

Rack travel in mm : 19.50...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: CUM

Edition

: 11.01.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 866 179

Injection pump

Pump designation : PES6A1000320/3RS2591

EP type number

: 9 410 230 025

Governor

Governor design.

: RSV550...1100A0c2238

-2R

: C.D.C.

Governer no.

: 0 420 233 296

Customer-spec, information Customer

Engine

: 6CTA-830

1st version kW

: 157.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.3...12.5

100 s: (12.1...12.7)

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 550.0

Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread

Spread

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Aneroid pressure h: 900

: 123.0...125.0

Del.quantity

1000 : (121.0...127.0) : 4.00

Spread

cm3 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testina: Speed

1st rack travel in: 11.70 rpm : 1165...1175

2nd rack travel in: 4.00

rpm : 1225...1235 Speed 3rd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 25...33 Setting point w/out bumper spring

riom : 550 Rack travel in mm: 5.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 550

Rack travel in mm : 5.60...5.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 12.70...12.80

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90 2nd pressure hPa : 340 Rack travel in m: 11.20...11.30 3rd pressure hPa : 465

Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 80.0...82.0 1000 s: (78.0...84.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1165...1175

H22

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 550

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 6.00 1000 s: (8.00)

Remarks:

: C.D.C. # 3923479

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : VAL 3,3 b Edition : 21.09.92 : 03.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 873 040

Injection pump

Pump designation : PES3A95D32GRS2810 EP type number : 0 410 893 997

Governor

Governor design. : RSV375...1175A2c2178

-10R

: 0 420 233 281. Governor no.

Customer-spec. information Customer : VALMET

Engine : 320 DS

: 55.0 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1- 2- 3 Fining order

Phasing : 0-120-240

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference * CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 0.8...1.5

100 s: (0.5...1.7)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

: 85.5...87.5 Del.quantity

1000 : (83.5...89.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...106

Testing:
1st rack travel in: 9.70
Speed rpm : 1215...17

Speed rpm: 1215...1225
2nd rack travel in: 4.00
Speed rpm: 1270...1300
3rd rack travel in: 4.00
Speed rpm: 1275...1305

Speed rpm : 1275...1305 4th rack travel in: 1440 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 375

Rack travel in mm : 3.8

Testing:

Speed rpm: 100 Minimum rack trave: 19.50 Speed rpm: 375 Rack travel in mm: 4.20...4.40

Rack travel in mm : 2.00 Speed rpm : 420...480

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.70...10.80
2nd speed rpm : 500

Rack travel in m: 11.30...11.40
4th speed rpm : 990

4th speed rpm : 990 Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 500 Del.quantity cm3/: 73.5...76.5 1000 s: (71.0...79.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...210.0 1000 s: (197.0...213.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.20...4.40
Del.quantity cm3/: 8.0...15.0

1000 s: (5.5...17.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

H24

Note remarks

Test sheet : LIE 5,6 a
Edition : 27.11.92
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump

Pump designation : PES4A95D410RS2685 EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1C2187

...

Governer no. : 0 420 232 387

Customer-spec. information Customer : LIEBHERR

Engine : D904 NA

1st version kW : 90.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 975

Del.quantity : 119.0...121.0 1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing: 1st rack travel in: 11.20 rpm : 1020...1030 Speed 2nd rack travel in: 4.00 Speed rpm : 1035...1065 3rd rack travel in: 4.00 rpm : 1075...1095 Speed 4th rack travel in: 1230 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 415 Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 415 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed rpm : 535...595 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.20...12.30 2nd speed rpm : 500 Rack travel in m: 12.20...12.40 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1020...1030 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 415 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

Note remarks

Test sheet : LIE 5,6 a15 : 27.11.92 Edition : 10.92 Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 238R

Injection pump

Pump designation: PES4A95D410RS2685 EP type number : 0 410 894 996

Governor

: RSV400...1000A1c2187 Governor design.

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 415.0 Rack travel in mm: 6.6...6.8

Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

: 119.0...121.0 Del.quantity 1000 : (117.0...123.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing: 1st rack travel in: 11.20 rpm : 1020...1030 Speed 2nd rack travel in: 4.00 rpm : 1035...1065 Speed 3rd rack travel in: 4.00 rpm : 1075...1095 Speed 4th rack travel in: 1230 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 415 Rack travel in mm : 6.2 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 415 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed rpm : 535...595 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.20...12.30 2nd speed rpm : 500 Rack travel in m: 12.80...13.00 rpm : 800 3rd speed Rack travel in m: 12.80...13.00 4th speed rpm : 900 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 114.0...120.0 1000 s: (111.5...122.5) rpm : 800 Speed Del.quantity cm3/: 125.5...128.5 1000 s: (123.0...131.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1020...1030 Speed STARTING FUEL DELIVERY

npm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 19.50...21.00

LOW IDLE

:

Remarks:

H28

Speed

Note remarks

Test sheet : VAL 44 c Edition : 21.09.92 Replaces : 02.91 Test oil : ISO-4113

Combination no. : 0 400 874 250

Injection pump

Pump designation : PES4A95D32ORS2807 EP type number : 0 410 894 994

Governor

Governor design. : RSV375...1125A2C2178

-7R

Governer no. : 0 420 233 279

Customer-spec. information Customer : VALMET

: 420 DS Engine

1st version kW : 75.0 : 2250 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-2-4-3

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1125

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rom : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

: 86.5...88.5 Del.quantity

1000 : (84.5...90.5)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 97...105 Testing: 1st rack travel in: 10.20

Speed rpm : 1165...1175 2nd rack travel in: 4.00

Speed rpm : 1235...1265 3rd rack travel in: 4.00

Speed rpm : 1245...1275 4th rack travel in: 1410

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 71...79 Setting point w/out bumper spring

rpm : 375 Speed Rack travel in mm: 5.1

Testina:

Speed rpm : 100 Minimum rack trave: 19.50 rpm : 375 Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm: 2.00 Speed rpm : 465...525

TORQUE CONTROL Torque control curve - 1st version rpm : 1125 1st speed Rack travel in m: 11.20...11.30 2nd speed rpm : 500

Rack travel in m: 11.50...11.60

4th speed rpm : 965

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.guantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 195.0...205.0

1000 s: (192.0...208.0)

Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm3/: 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50

:

1000 s: (5.00)

Remarks:

APPLICATION

Tractor (tractor engines)

J02

Note remarks

Test sheet Edition

: MB 5,7 m 10 : 27.11.92

Replaces

: 09.92

Test oil

: ISO-4113

Combination no. : 0 400 876 188

Injection pump

EP type number

Pump designation : PES6A80D41DRS2085X

: 0 410 886 045

Governor

Governor design. : RSV350...1400A2C1052

Governer no.

: 0 420 232 406

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M352

1st version kW

: 80.9

Rated speed

: 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

: 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1400

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 5.2...5.3

100 s: (5.0...5.4)

Spread

cm3 : 0.2

100 s: (0.4)

2nd speed

rpm : 350.0

Rack travel in mm: 6.4...7.0

Del.quantity cm3/: 1.0...1.2

100 s: (0.8...1.3)

Spread

cm3 : 0.2 100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1400

Del.quantity

: 52.0...53.0 1000 : (50.5...54.5)

Spread

: 2.50

cm3 1000

: (4.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.00

rpm : 1450...1455 Speed

2nd rack travel in: 4.00

rpm : 1488...1501

3rd rack travel in: 4.00

Speed

Speed

rpm : 1515...1545

J03

4th rack travel in: 1680 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 54...62 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.7 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 rom : 500...560 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.00...9.10 rpm : 500 2nd speed Rack travel in m: 9.90...10.00 3rd speed rpm : 850 Rack travel in m: 9.50...9.70 4th speed rpm : 950 Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0) rpm : 850 Speed Del.quantity cm3/: 48.5...51.5 1000 s: (46.5...53.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1450...1455 Speed STARTING FUEL DELIVERY rpm : 100 Speed

Del.quantity cm3/: 78.0...88.0

Rack travel in mm : 14.20...14.60

rpm : 350

1000 s: (75.0...91.0)

Rack travel in mm : 6.40...7.00 Del.quantity cm3/ : 10.0...12.0 1000 s: (8.5...13.5) Spread cm3 : 2.00 1000 s: (3.50)

Remarks:

J04

Speed

LOW IDLE

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 1.90...2.00 : (1.85...2.05) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : KHD 9,6 k 1 Edition : 31.07.92 Replaces : 9.85 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 400 876 198 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6A95D410RS2416 EP type number : 0 410 896 961 rpm: 1140 1st speed Governor Governor design. : RSV300...1150A8C616 Rack travel in mm : 10.00...10.10 DL : 0 420 232 323 Governer no. Del.quantity cm3/: 9.8...10.0 Customer-spec. information 100 s: (9.6...10.2) Customer : KHD Spread cm3 : 0.3Engine : F6L413FR 100 s: (0.6) : 140.0 1st version kW : 2300 Rated speed rpm : 300.02nd speed : 106.0 2nd version kW Rack travel in mm: 5.9...6.1 Rated speed Del.quantity cm3/: 1.4...2.0 : 2300 100 s: (1.1...2.2) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 419 992 198 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 5.75: 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version Speed rpm : 1140 : 98.0...100.0 Del.quantity Test lines : 1 680 750 014 1000 : (96.0...102.0) Spread cm3 : 3.50 Outside diameter 1000 : (6.00) x Wall thickness 2nd version Speed rpm : 1140 Del.quantity cm3/ : 76.0...77.0 : 6.00X2.00X600 x Length mm (A) Injection pump setting values 1000 s: (74.0...79.0) Insp. values in parentheses Spread cm3 : 3.0 Set equal delivery quant. 1000 s: (6.0) per values RATED SPEED BEGINNING OF DELIVERY Test pressure, bar: 25...27 1st version

Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 104...112 Testing: 1st version Speed rpm : 650 Del.quantity cm3/ : 93.5...96.5 1000 s: (91.0...99.0) 1st rack travel in: 9.00 rpm : 1180...1190 Speed 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 3rd rack travel in: 4.00 2nd version rpm : 1250...1280 Speed Speed man 4th rack travel in: 1410 Del.quantity cm3/: rom : 0.30...1.40Speed 1000 s: cm3 : -Spread 2nd version 1000 s: -Control Lever position degrees: 51...59 **BREAKAWAY** Testina: 1st rack travel in: 7.20 1st version Speed rpm : 1180...1190 1mm rack travel less than 2nd rack travel in: 4.00 rpm : 1215...1245 Speed full load rack tr: 9.00 4th rack travel in: 1325 Speed rpm : 1180...1190 Speed rpm : 0.30...1.70 2nd version LOW IDLE 1 1mm rack travel less than Control lever full load rack tr: 7.20 position degrees: 70...78 Speed rpm : 1180...1190 Setting point w/out bumper spring rpm : 300 STARTING FUEL DELIVERY Rack travel in mm: 5.5 Testina: rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 300
Rack cravel in mm : 5.90...6.10
Rack travel in mm : 2.00 Rack travel in mm : 15.80...16.20 Speed rpm : 100 Speed rpm : 535...595 Del.quantity cm3/: 111.5...121.5 1000 s: (108.5...124.5) TORQUE CONTROL Rack travel in mm : 13.6...14.0 Dimension a mm : 0.40 Torque control curve - 1st version Remarks: 1st speed rpm : 1140 Rack travel in m: 10.00...10.10 2nd speed rpm : 500 Rack travel in m: 10.40...10.50 **APPLICATION** : 750 4th speed rpm Rack travel in m: 10.20...10.30 Installation 2300 Torque control curve - 2nd version 1st speed rpm : 1140 Rack travel in m: 8.20...8.30 2nd speed rpm : 500 Rack travel in m: 9.10...9.20 rpm : 750 3rd speed Rack travel in m: 8.90...9.10 4th speed וווכניו : 900 Rack travel in m: 8.40...8.60

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 9,6 K 2 Edition : 31.07.92 Replaces : 03.87 Test oil : ISO-4113 Combination no. : 0 400 876 199 Injection pump Pump designation : PES6A95D410RS2416 EP type number : 0 410 896 961 Governor Governor design. : RSV300...750A7(616L : 0 420 232 322 Governer no. Customer-spec. information Customer : KHD Engine : F6L413FR 1st version kW : 110.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00 : (1.95...2.05)
Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750

Del.quantity : 76.0...77.0 1000 : (74.0...79.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 92...100

Testing:

1st rack travel in: 8.20

Speed rpm : 780...790 2nd rack travel in: 4.00 Speed rpm : 790...820

4th rack travel in: 930

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

: 470...530 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 9.20...9.30

2nd speed rpm : 600

Rack travel in m: 9.80...9.90

3rd speed rpm : 350

Rack travel in m: 9.90...10.30

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.20

Speed rpm : 780...790

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 111.5...121.5 1000 s: (108.5...124.5)

Rack travel in mm: 13.50...14.10

Remarks:

Note remarks

Test sheet : DEE : 18.12.91 Edition Replaces : 9.76 Test oil : ISO-4113

Combination no. : 0 400 876 247

Injection pump

Pump designation : PES6A95D410RS2500 EP type number : 0 410 896 946

Governor

Governor design. : RSV400...1100A7B772L

: 0 420 232 209 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: W 187 000 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

rpm : 400.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.2...1.7

100 s: (0.9...1.9)

cm3 : 0.3 Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting \bar{x} :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1080

: 85.5...87.5 1000 : (83.5...89.5) Del.quantity

Spread cm3 : 3.00

RATED SPEED

1st version Control lever

position degrees: 66...74

Testing:

1st rack travel in: 9.00

Speed rpm: 1110...1120
2nd rack travel in: 5.00
Speed rpm: 1135...1140
4th rack travel in: 1250

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 25...33 Setting point w/out bumper spring

Speed rpm : 400

```
Rack travel in mm: 5.5
Testing:
              rpm : 100
Speed
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
              rpm : 510...570
Speed
Speed
                   : 650
             rpm
Maximum rack trave: 1.00
TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
  Rack travel in m: 10.00...10.10
2nd speed rpm : 400
  Rack travel in m: 10.00...10.20
3rd speed rpm : 300
  Rack travel in m: 10.70...11.30
BREAKAWAY
1st version
1mm rack travel less than
 full load rack tr: 9.00
             rpm : 1110...1120
Speed
STARTING FUEL DELIVERY
Speed rpm : 100
Del.quantity cm3/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00
HIGH IDLE
1st version
Speed
                   : 1150
              rpm
Rack travel in mm : 4.50...4.70
Del.quantity cm3/: 14.0...20.0
              1000 s: (13.0...21.0)
Spread
               cm3 : 4.00
LOW IDLE
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...17.0
              1000 s: (9.5...19.5)
               cm3 : 3.00
Spread
Remarks:
Start-of-delivery mark at 14° angular
```

displacement of the cam after start of

delivery of cylinder 1

J10

Note remarks

Test sheet

: DEE

Edition

: 18.12.91

Replaces

: 9.76

Test oil

: ISO-4113

Combination no.

: 0 400 876 248

Injection pump

Pump designation : PES6A95D410RS2500

EP type number

: 0 410 896 946

Governor-

Governor design.

: RSV400...1200A2B773D

Governer no.

: 0 420 234 349

Customer—spec. information

Customer

: JOHN DEERE

Engine

: 6404 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: W 187 000 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Prestroke mm

: 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

BASIC SETTING

Phasing

1st speed

Tolerance + - °

Time to cyl. no. : 1

rpm : 1200

Rack travel in mm : 9.70...9.80

: 0.50 (0.75)

: 0-60-120-180-240-300

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

Spread

Spread

rpm : 400.0

cm3 : 0.3

2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.2...1.7

100 s: (0.9...1.9) cm3 : 0.3

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Del.quantity

: 35.5...87.5

1000 : (83.5...89.5) : 3.00

Spread cm3

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8.70

rpm : 1240...1250 Speed

2nd rack travel in: 5.00

Speed rpm : 1280...1285

4th rack travel in: 1450

rpm : 0.30...1.70 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

J11

Speed rpm : 400 Rack travel in mm : 5.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00 rpm : 580...640 Speed

rpm : 750 Speed Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.70...9.80

2nd speed rpm : 800

Rack travel in m: 10.30...10.40

3rd speed rpm : 600

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 800 Speed

Del.quantity cm3/: 92.0...95.0 1000 s: (89.5...97.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 156.5...176.5 1000 s: (153.5...179.5)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

rpm : 1295 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 21.0...27.0 1000 s: (20.0...28.0)

cm3 : 4.00 Spread

LOW IDLE

Speed : 400 rpm

Rack travel in mm : 5.70...5.90

J12

Del.quantity cm3/: 12.0...17.0 1000 s: (9.5...19.5)

Spread cm3 : 3.00

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Phasing : 0-60-120-180-240-300 Note remarks Tolerance $+ - ^{\circ} : 0.50 (0.75)$: DEE 6,6 h 2 : 18.12.91 Test sheet Time to cyl. no. : 1 Edition Replaces : 08.89 BASIC SETTING Test oil : ISO-4113 1st speed rpm: 1100 Combination no. : 0 400 876 249 Rack travel in mm : 9.80...9.90 Injection pump Pump designation : PES6A95D410RS2500 Del.quantity cm3/ : 7.9...8.1 EP type number : 0 410 896 946 Governor 100 s: (7.7...8.3) Governor design. : RSV600...1100A2B774L Governer no. : 0 420 232 210 Spread cm3 : 0.3Customer-spec. information 2nd speed rpm : 600.0Rack travel in mm: 5.2...5.4 Customer : JOHN DEERE Del.quantity cm3/: 1.2...1.7 Engine : 6404 T 100 s: (0.9...1.9) cm3 : 0.3Spread TEST BENCH REQUIREMENTS GUIDE SLEEVE POSITION Test oil Control-lever position inlet temp. °C : 38...42 Degree: -3 rpm : 800 Speed Overflow valve Rack travel in mm : 0.30...1.00 : W 187 000 000 Governor spring pre-tension Inlet press., bar: 1.50 Click setting x : ?Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP : 0 681 343 009 assembly 1st version Opening Speed rpm : 1100 pressure, bar : 172...175 : 79.5...81.5 Del.quantity 1000 : (77.5...83.5) Spread cm3 : 3.00 Test lines : 1 680 750 008 1000 : (-) Outside diameter RATED SPEED x Wall thickness : 6.00x2.00x600 x Length mm 1st version Control lever (A) Injection pump setting values position degrees: 36...44 Insp. values in parentheses Set equal delivery quant. Testing: per values 1st rack travel in: 8.80 rpm : 1140...1150 BEGINNING OF DELIVERY 2nd rack travel in: 5.00 rpm : 1165...1170 Speed 4th rack travel in: 1300 Prestroke mm : 1.90...2.00 : (1.85...2.05) : 0.30...1.70 Speed **MCL** Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order LOW IDLE 1

Control lever

position degrees: 16...24
Setting point w/out bumper spring

Speed rpm : 600 Rack travel in mm : 4.8 Testing: Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 600 Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 Speed : 670...730 rom Speed mom : 850 Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.80...9.90

2nd speed

nd speed rpm : 500 Rack travel in m: 9.80...10.00

: 400 3rd speed rpm

Rack travel in m: 10.50...11.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.80

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 156.5...176.5

1000 s: (153.5...179.5)

Rack travel in mm: 19.00...21.00

HIGH IDLE

1st version

: 1200 Speed rpm

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 21.0...27.0 1000 s: (20.0...28.0)

cm3 : 4.00 Spread

1000 s: (-)

LOW IDLE

rpm : 600 Speed

Rack travel in mm: 5.20...5.40 Del.quantity cm3/: 12.0...17.0 1000 s: (9.5...19.5)

Spread cm3 : 3.00

1000 s: (-)

:

Remarks:

displacement of the cam after start of delivery of cylinder i

Start-of-delivery mark at 14° angular

J14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,0 j 3 Edition : 11.01.93 Replaces : 07.91 Test oil : ISO-4113 Combination no. : 0 400 876 388 Injection pump Pump designation : PES6A95D41ORS2797 EP type number : 0 410 896 900 Governor Governor design. : RSV350...1200A1C1154 -2L Governer no. : 0 420 232 561 Customer—spec. information Customer : MERCEDES-BENZ Engine : OM 366 1st version kW : 81.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 9.80...9.90 Del.quantity cm3/: 5.4...5.6 100 s: (5.2...5.8) Spread cm3 : 0.3100 s: (0.6) rpm : 350.02nd speed Rack travel in mm : 9.4...10.0 Del.quantity cm3/: 0.8...1.4 100 s: (0.5...1.6) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 3.75FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200Del.quantity : 54.5...56.5 1000 : (52.5...58.5) : 3.50 Spread cm31000 : (6.00) RATED SPEED 1st version Control lever position degrees: 108...116 Testing: 1st rack travel in: 8.80 Speed rpm : 1240...1245 2nd rack travel in: 4.00

rpm : 1263...1280

Speed

3rd rack travel in: 4.00

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 3.20...3.30

: (3.15...3.35)

Speed rpm : 1300...1330 4th rack travel in: 1400 rpm : 0.30...1.40 Speed 5th rack travel in: 1255...1265 Speed rpm: 8.80 LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 9.70 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 9.40...10.00 Rack travel in mm : 2.00 rpm : 495...555 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.80...9.90 2nd speed rpm : 500 Rack travel in m: 11.10...11.30 3rd speed rpm : 850 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.80 Speed rpm : 1240...1245 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 80.0...90.0 1000 s: (77.0...93.0) Rack travel in mm : 15.50...15.90 Remarks:

Unimog

APPLICATION

Note remarks

Test sheet : AIF Edition : 18.12.92 Replaces : 03.92 Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump

Pump designation : PES6A90D410RS2723 EP type number : 0 410 896 085

Governor

Governor design. : RSV300...1350A0C2257

: 0 420 232 568 Governer no.

Customer-spec. information Customer : IVECO-AIFO

Engine : 8061.3RM 25

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30

: (2.15...2.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 10.9...11.0

100 s: (10.7...11.2)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm: 9.0...9.2 Del.quantity cm3/: 2.3...2.7

100 s: (2.1...2.9)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

: 109.0...110.0 Del.quantity

1000 : (107.0...112.0) cm3 : 3.00

Spread

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 100...108

Testing:

1st rack travel in: 12.70

Speed rpm : 1390...1400 2nd rack travel in: 4.00

rpm : 1595...1625 Speed

4th rack travel in: 1700

Speed rpm : 0.30...1.40 LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.5 : 300 Speed rpm

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00 Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 1350

Rack travel in m: 13.60...13.70 od speed rpm : 500

2nd speed

Rack travel in m: 13.60...13.80

5th speed rpm : 350 Rack travel in m: 15.10...15.30

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed

Del.quantity cm3/: 97.0...99.0

1000 s: (94.5...101.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70

rpm : 1390...1400 Speed

STARTING FUEL DELIVERY

rom : 100 Speed

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet

: FOR Edition : 03.02.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 876 404

Injection pump

Pump designation : PES6A95D41DRS2835

EP type number

: 0 410 896 896

Governor

Governor design.

: RSV650...1050A8c2263

Governer no.

: 0 420 232 583

Customer-spec. information

Customer

: FNH-GEOTECH

Engine

: 7.5 L

1st version kW

: 149.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65

: (2.50...2.70)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

rpm : 1050

1st speed

Rack travel in mm: 13.00...13.20

Del.quantity cm3/: 12.3...12.7

100 s: (12.0...12.9)

Spread

2nd speed

cm3 : 0.3

100 s: (0.6)

rpm : 650.0

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 2.1...2.5

100 s: (1.9...2.8)

Spread

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050

Aneroid pressure h: 1200

: 123.0...127.0

Del.quantity 1000

cm3

: (120.5...129.5)

Spread

: 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testina:

1st rack travel in: 12.00

J19

rpm : 1093...1098 Speec 2nd rack travel in: 4.00 rpm : 1128...1143 Speed 4th rack travel in: 1300 rom : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 73...81 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm : 4.9 Testina: Speed mom : 100 Minimum rack trave: 19.50 rpm : 550 Rack travel in mm: 5.30...5.50 Rack travel in mm: 2.00 Speed rom : 670...730 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.00...13.20 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 3rd speed rpm : 975 Rack travel in m: 13.50...13.80 4th speed rpm : 1050 Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rom. : 500 hPa : 1200 Pressure Rack travel mm : 14.40...14.60 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 550 Rack travel in m: 13.50...13.60 3rd pressure hPa : 325 Rack travel in m: 10.50...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 750

Del.quantity cm3/: 150.5...152.5

1000 s: (148.5...154.5)

Spread cm3: 3.5G
1000 s: (6.00)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 75.0...79.0
1000 s: (72.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm: 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (187.0...213.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 21.5...25.5
1000 s: (19.0...28.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Hydraulic latching of starting delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

Note remarks

Test sheet

: FOR Edition : 22.01.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 876 405

Injection pump

Pump designation : PES6A95D410RS2835

EP type number

: 0 410 896 896

Governor

Governor design.

: RSV400...1050A2C2263

-11_

Governer no.

: 0 420 232 584

Customer-spec. information

Customer

: FNH-GEOTECH

Engine

: 7.5 L-8640 Trak

1st version kW

: 131.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Openina |

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.55...2.65 : (2.50...2.70) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

BASIC SETTING

1st speed

rom : 1050

Rack travel in mm: 12.10...12.30

Del.quantity cm3/: 11.1...11.5

100 s: (10.8...11.7)

cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

Spread

Spread

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1050

Aneroid pressure h: 1200

Del.quantity

: 111.0...115.0

1000 : (108.5...117.5)

Spread

cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed : 1093...1098 COM 2nd rack travel in: 4.00 Speed : 1163...1178 rpm 4th rack travel in: 1300 Speed : 0.30...1.40 rpm LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.1 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 400 Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 Speed : 570...630 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.10...12.30 rpm : 750 2nd speed Rack travel in m: 14.00...14.20 rpm : 925 3rd speed Rack travel in m: 13.10...13.40 4th speed rpm : 1050 Rack travel in m: 11.60...11.80 Anaroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1200 Rack travel mm : 14.00...14.20 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.10...10.20 2nd pressure hPa : 900 Rack travel in m: 13.50...13.60 3rd pressure hPa : 600 Rack travel in m: 11.60...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 750 rpm

Del.quantity cm3/: 140.0...142.0

1000 s: (138.0...144.0)

cm3 : 3.50Spread 1000 s: (6.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1093...1098 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 185.0...205.0 1009 s: (182.0...208.0) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5) Spread cm3 : 3.501000 s: (5.50) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Hydraulic latching of starting delivery. Latching at 0.75 bar...0.85 bar. Unlatching at 0.40 bar...0.50 bar APPLICATION Tractor (tractor engines)

Note remarks

Test sheet

: FOR Edition : 03.02.93

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 876 406

Injection pump

Pump designation : PES6A95D410RS2835

EP type number

: 0 410 896 896

Governor

Governor design.

: RSV400...1050A2C2263

-2L

Governer no.

: 0 420 232 585

Customer-spec. information

Customer

: FNH-GEOTECH

Engine

: 7.5 L-8740 Trak

1st version kW

: 142.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Openina |

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65

: (2.50...2.70)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm: : 13.40...13.50

Del.quantity cm3/: 13.0...13.4

100 s: (12.7...13.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 5.2...5.5

Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 130.0...134.0

1000 : (127.5...136.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 12.40

rpm : 1093...1098 Speed 2nd rack travel in: 4.00 Speed rpm : 1163...1178 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rom : 400 Rack travel in mm: 4.8 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 400 Rack travel in mm : 5.20...5.50 Rack travel in mm: 2.00 Speed rpm : 540...600 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.40...13.50 2nd speed rpm : 650 Rack travel in m: 15.00...15.20 rpm : 900 3rd speed Rack travel in m: 14.10...14.50 4th speed rpm : 1050 Rack travel in m: 12.90...13.00 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 1200 Pressure Rack travel mm : 15.00...15.20 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.70...10.80 2nd pressure hPa : 900 Rack travel in m: 14.00...14.10 3rd pressure hPa : 650 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 650 Del.quantity cm3/ : 164.0...166.0

1000 s: (162.0...168.0)

cm3 : 3.50Spread 1000 s: (-) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 99.0...101.0 1000 s: (96.5...103.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 Speed rpm : 1093...1098 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 185.0...205.0 1000 s: (182.0...208.0) LOW IDLE rpm : 400 Speed Rack travel in mm : 5.20...5.50 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: : Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery Hydraulic latching of starting delivery. Latching at 0.75 bar...0.85 bar. Unlatching at 0.40 bar...0.50 bar **APPLICATION** Tractor (tractor engines)

Note remarks

Test sheet

: FOR

Edition : 03.02.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 407

injection pump

Pump designation : PES6A95D41ORS2835

EP type number : 0 410 896 896

Governor

Governor design. : RSV650...1050A8C2263

-3L

: 0 420 232 586 Governer no.

Customer—spec. information

Customer : FNH-GEOTECH

Engine : 7.5 L

1st version kW : 138.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65

: (2.50...2.70)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (G.75)$

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 12.70...12.90

Del.quantity cm3/: 11.8...12.2

100 s: (11.5...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.0...2.4

100 s: (1.8...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 800

Del.quantity : 118.0...124.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 11.80

: 1093...1098 Speed rpm

2nd rack travel in: 4.00

rpm : 1128...1143 Speed

4th rack travel in: 1300

Speed rom : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 75...83 Setting point w/out bumper spring

rpm: : 650 Speed Rack travel in mm: 5.0

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 : 650 rpm

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00 : 750...810 Speed rpm

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.70...12.90

rpm : 750 2nd speed

Rack travel in m: 13.90...14.10

3rd speed : 975 rpm mcp

Rack travel in m: 13.20...13.50

4th speed : 1050 rom

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 800 Pressure

: 13.90...14.10 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.00...9.10

2nd pressure hPa : 550
Rack travel in m: 13.40...13.50
3rd pressure hPa : 325
Rack travel in m: 11.10...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 : 750 Speed

rpm Del.quantity cm3/: 140.0...142.0 1000 s: (138.0...144.0)

cm3 : 3.50Spread

1000 s: (6.00)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 75.0...79.0 1000 s: (72.5...81.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1093...1098

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 187.0...207.0 1000 s: (187.0...213.0)

LOW IDLE

: 650 Speed **CDM**

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 20.0...24.0 1000 s: (18.5...25.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Hydraulic latching of starting delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

Note remarks

Test sheet

: DEE

Edition

: 11.01.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 876 412

Injection pump

Pump designation: PES6A1000410RS2762-1

EP type number

: 0 410 806 008

Governor

Governor design.

: RSV450...1100A0C2252

-3L

Governer no.

: 0 420 232 592

Customer-spec, information

Customer

: JOHN DEERE

Engine

: 6076TDW 30

1st version kW

: 120.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

Firing order

: 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 450.0

Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5)

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 300

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

: 101.0...103.0

Del.quantity

1000 : (99.0...105.0)

Spread

: 4.00 cm3

: (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

J27

1st rack travel in: 9.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

: 1200...1210 Speed rom

3rd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 20...28

Setting point w/out bumper spring

: 450 rpm Rack travel in mm: 4.8

Testina:

Speed : 100 rom Minimum rack trave: 19.00

rpm : 450

Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 10.90...11.00

2nd speed rpm : 500

Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed

Del.quantity cm3/: 136.5...140.5

1000 s: (134.5...142.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 450

Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE54248

Start-of-delivery mark = 13,5° after start of delivery cyl. 1.

Adjustment without torque-centrel spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet

: KHD Edition : 11.01.93

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 413

Injection pump

Pump designation : PES6A85D41ORS2761-1

EP type number : 0 410 886 894

Governor

Governor design. : RSV325...1150A8C673-

: 0 420 232 519 Governer no.

Customer-spec. information Customer

: BF6L913 Engine

1st version kW : 112.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0Rack travel in mm: 7.5...7.7

Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 84.5...85.5 1000 : (82.5...87.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control Lever

position degrees: 100...108

Testing:

1st rack travel in: 11.10

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

3rd rack travel in: 4.00

rpm : 1240...1270 Speed 4th rack travel in: 1410

rpm : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 7.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325

Rack travel in mm: 7.00...7.20

Rack travel in mm: 2.00 : 430...490 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.10...12.20 2nd speed rpm : 500 Rack travel in m: 12.70...12.80

3rd speed rpm : 855

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 87.0...89.0

1000 s: (84.5...91.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 110.0...120.0

1**000** s: (1**0**7.0...123.0)

Rack travel in mm: 17.00...17.40

Remarks:

: ORENSTEIN + KOPPEL

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 11.01.93 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 414 Injection pump Pump designation : PES6A85D41ORS2761-1 EP type number : 0 410 886 894 Governor Governor design. : RSV325...1150A8C674-: 0 420 232 518 Governer no. Customer-spec. information : KHD Customer Engine : BF6L913 1st version kW : 112.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3:0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7)

Spread cm3 : 0.2 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1150 Aneroid pressure h: 700

Del.quantity : 84.5...85.5 1000 : (82.5...87.5)

Spread cm3 : 3.00 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200 2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1410

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 63...71

Setting point w/out bumper spring

rpm : 325° Rack travel in mm: 7.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 325

Rack travel in mm : 7.50...7.70

Rack travel in mm: 2.00

Speed rom : 430...490

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.10...12.20 2nd speed rpm : 500 Rack travel in m: 12.70...12.80

3rd speed rpm : 855

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version Setting

Speed

rpm : 500 Pressure hPa : -

Rack travel mm : 11.50...11.60

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 350

Rack travel in m: 11.90...12.00 3rd pressure hPa : 700

Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750 Speed

Del.quantity cm3/: 87.0...89.0

1000 s: (84.5...91.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 64.5...65.5

1000 s: (62.5...67.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 110.0...120.0

1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Edition : 11.01.93

Replaces : 09.91 Test oil : ISO-4113

Combination no. : 0 401 840 763

Injection pump

Pump designation: PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1000PA8G3-1

Governer no. : 0 421 801 463

Customer-spec. information

Customer : KHD

Engine : BF12L513/C

1st version kW : 342.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

Test sheet : KHD 19,2 b2

Phasing

: 0-15-60-75-120-135-

11- 10- 3- 6- 7- 12

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm3 : 0.5Spread

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.7Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 164.0...166.0 Del.quantity 1000 : (161.0...169.0)

: 5.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testina:

1st rack travel in: 11.90

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

rom : 1105...1135 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.9

Testing:

rpm : 100 Speed Minimum rack trave: 8.10

Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.90...13.00

2nd speed rpm : 650

Rack travel in m: 13.20...13.40

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

:

1000 s: (131.0...169.0)

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 9,0 i Edition : 03.12.92 : 02.89 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 849 Injection pump Pump designation: PE6P12OA32ORS3196 EP type number : 0 411 826 763 Governor Governor design. : RQV200...1100PA729-1 Governer no. : 0 421 813 470 Customer-spec, information Customer : SAAB-SCANIA Engine : DS9 06 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Ocenina | pressure, bar : 207...210 Orifice plate diameter mm : 0.8 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.00...5.10

Rack travel in mm : 9.00...12.00

: (4.95...5.15)

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 10.40...10.50 Del.quantity cm3/: 13.3...13.5 100 s: (13.0...13.8) Spread cm3 : 0.5100 s: (0.8) rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.3 Del.quantity cm3/: 2.2...2.6 100 s: (-) cm3 : 0.3Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 225 travel mm : 0.50...0.90 rpm : 350 2nd speed travel mm : 2.00...2.60 3rd speed rpm : 650 travel mm : 4.90...5.50 rpm : 1145 4th speed : 8.30...8.50 travel mm 5th speed rpm : 1250 travel mm : 9.20...9.60 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1120 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Del.quantity : 133.0...135.0 1000 : (130.0,...138.0) Spread : 5.00 cm3 1000 : (8.00)

Prestroke mm

RATED SPEED

1st version Control lever

position degrees: 111...119

Testing:

1st rack travel in: 9.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1250...1280 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 59...67

Testing:

Speed : 100 COID

Minimum rack trave: 6.20

rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

: 300...3(0 Speed rpm

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del.quantity cm3/: 145.0...153.0

1000 s: (143.0...155.0)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 330.0...380.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 225 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RCBC diaphraam.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i1 Edition : 18.12.92 Replaces : 07.92

Test oil : ISO-4113

Combination no. : 0 401 846 869

Injection pump

Pump designation: PE6P12GA32CRS3118 EP type number: 0 411 826 726

Governor

Governor design. : RQV250...1100PA920-5

Governer no. : 0 421 813 782

Customer-spec. information Customer : VOLVO

Engine : THD 102 KD

1st version kW : 250.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70

: (2.55...2.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 4.4...4.6 Del.quantity cm3/ : 2.9...3.4 100 s: (2.7...3.7)

Spread cm3 : 0.5 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm: 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0

1000 : (219.0...227.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testing:

1st rack travel in: 11.70

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed : 100 rpm Minimum rack trave: 6.00 Speed : 250 rom

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 250...420 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed riom : 500 hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 160

Rack travel in m: 8.60...8.70

3rd pressure hPa : 850

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 133.0...135.0

1000 s: (130.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 230.0...270.0 1000 s: (226.0...274.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 250 rom

Rack travel in mm : 4.40...4.60

Del.quantity cm3/: 29.5...34.5

1000 s: (27.0...37.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.50 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: DAF 8,3 p 4

Edition

: 27.11.92

Replaces Test oil : 07.91 : ISO-4113

Combination no.

: 0 401 846 898

Injection pump

EP type number

Pump designation : PE6P11UA72CRS3225

: 0 411 816 763

Governor

Governor design.

: RQV275...1200PA910

Governer no.

: 0 421 813 746

Customer-spec. information Customer

: DAF

Engine

: HS 200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 275.0

Rack travel in mm: 7.2...7.4

Del.quantity cm3/: 1.4...1.9

100 s: (1.1...2.1)

Spread

cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.90...3.30

3rd speed rpm : 800 travel mm

: 4.70...5.10 4th speed rpm : 1200

: 7.80...8.00 travel mm

: 1500 5th speed

rpm : 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1235

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

Speed

rom : 1000

Aneroid pressure h: 1000

: 124.0...126.0

Del.quantity

1000 : (122.0...128.0)

cm3

: 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever position degrees: 116...124 Testing: 1st rack travel in: 11.50 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 rpm : 1345...1375 Speed 4th rack travel in: 1450 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed : 100 ron Minimum rack trave: 6.70 Speed rpm : 275 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION Speed rpm : 280...400 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure Rack travel mm : 12.50...12.60 Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 10.90...11.00 2nd pressure hPa : 360 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 87.0...89.0 1000 s: (85.0...91.0) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1240...1250

Speed rpm : 275 Rack travel in mm : 4.70...4.90

Remarks:

LOW IDLE

K12

full load rack tr: 11.50

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet Edition

: SCA : 23.10.91

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 846 926

Injection pump

Pump designation : PE6P110A720RS3040-2

EP type number Governor

: 0 411 816 774

Governor design.: RQV200...1000PA555-4

Governer no.

: 0 421 813 878

Customer-spec, information Customer

: SCANIA

Engine

: DS11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 104

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,7

Test lines

: 1 680 750 008

Outside diameter

× Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.30...3.40

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

K13

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm: 13.30...13.40

Del.quantity cm3/: 17.2...17.4

100 s: (17.0...17.6)

Spread

cm3 : 0.6

100 s: (0.9)

2nd speed

rpm : 250.0

Rack travel in mm: 4.4...4.8 Del.quantity cm3/: 1.7...2.1

100 s: (-)

Spread

cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 1.10...1.50 travel mm

2nd speed

rpm : 350

travel mm

: 2.30...2.90

3rd speed

rpm : 700

travel mm

: 4.70...5.30

4th speed

rpm : 1050

travel mm 5th speed

: 8.40...8.60

travel mm

rpm : 1165

: 9.90...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 700

Aneroid pressure h: 900 Del.quantity : 172.0..... 176.0)

Spread

cm3 : 6.00

1000 : (9.06)

RATED SPEED

1st version

Control Lever

position degrees: 112...120

Testina:

1st rack travel in: 12.30

Speed rpm : 1040...1050 2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LCW IDLE 1

Control lever

position degrees: 61...69

Testina:

Speed : 100 rom

Minimum rack trave: 6.00

Speed : 250 rpm

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

Speed rpm : 360...420

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 CDM Pressure hPa : 900

: 13.30...13.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.80...12.20

2nd pressure hPa : 405

Rack travel in m: 13.10...13.20 3rd pressure hPa : 290 Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 165.0...173.0 1000 s: (163.0...175.0)

Aneroid pressure h: -

Speed rom : 500 Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rom : 250

Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.40...2.50 : (2.30...2.50) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : VOL 5,9 b : 18.12.92 Test sheet Edition : 07.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 937 Tolerance $+ - ^{\circ} : 0.30 (0.75)$ Injection rump Time to cyl. no. : 1 Pump designation : PE6P110A320RS3266 EP type number : 0 411 816 777 BASIC SETTING Governor Governor design. : RQV300...1300PA996K 1st speed rpm: 780 : 0 421 815 277 Governer no. Rack travel in mm : 11.90...12.00 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 13.9...14.1 Engine : TD63ES 100 s: (13.7...14.3) 1st version kW : 155.0 Spread cm3 : 0.5Rated speed : 2600 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 330.0 2nd speed Test oil Rack travel in mm: 5.4...5.6 inlet temp. °C : 38...42 Del.quantity cm3/ : 1.7...2.1 100 s: (1.4...2.4) Overflow valve cm3 : 0.7Spread : 1 457 413 010 100 s: (1.1) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 101 GUIDE SLEEVE TRAVEL 1st speed rpm : 330 Opening : 1.20...1.60 travel mm pressure, bar : 207...210 2nd speed rpm : 500 : 2.90...3.50 travel mm Orifice plate 3rd speed rpm : 900 : 4.70...5.30 diameter mm : 0.6 travel mm 4th speed rpm : 1370 travel mm : 9.80...10.00 Test lines : 1 680 750 008 5th speed : 1450 rom travel mm : 11.00...11.40 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x2.00x600 Control-lever position Degree: -1 rpm : 1470 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 6.00...12.00 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 780

Aneroid pressure h: 1200

Del.quantity : 139.0...141.0

1000 : (137.0...145.0)

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 11.20

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

Speed rpm : 1430...1460

4th rack travel in: 1520

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 70...78

Testing:

: 100 Speed rpm Minimum rack trave: 7.00

: 330 Speed COM

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 330...600 Speed

TORQUE CONTROL

Dimension a mm . 0.30

Torque control curve - 1st version

1st speed rpm : 780

Rack travel in m: 11.90...12.00 2nd speed rpm : 1300

Rack travel in m: 12.20...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1300 Speed L'OU hPa : 1200 Pressure

: 12.20...12.40 Rack travel mm

Measurement

1/min: 1300 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 95

Rack travel in m: 8.70...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 1300 Speed

Del.quantity cm3/: 130.0...134.0 1000 s: (127.0...137.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

rpm : 780 Speed

Del.quantity cm3/ : 73.0...75.0

1000 s: (70.0 . . 78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed : 100 **CDM**

Del.quantity cm3/: 65.0...85.0

1000 s: (61.0...89.0)

Rack travel in nm : 8.50...8.70

LOW IDLE

rpm : 330 Speed

Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 17.0...21.0 1000 s: (14.0...24.0) Spread cm3 : 7.00

1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

DOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: PEG 10,5 a : 27.11.92 Test sheet Edition Replaces : 10.91

Test oil : ISO-4113

Combination no. : 0 401 846 947

Infection pump

Pump designation : PE6P110A720LS3283 EP type number : 0 411 816 786

Governor

Governor design. : RQV250...1000PA1011

Governer no. : 0 421 813 937

Customer-spec. information

Customer : IVECO-PEGASO

Engine : 95 T1 GX

1st version kW : 165.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 1.8...2.2

100 s: (1.6...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed travel mm

: 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650 travel mm

: 4.50...5.10 4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed : 1140 rpm : 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160 4th rack travel in: 1250 Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 81...89

Testing:

Speed rpm : 100

Minimum rack trave: 8.20

Speed rpm : 250

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 250...480 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 900 Pressure

Rack travel mm : 10.80...10.90

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 8.00...8.30

2nd pressure hPa : 520

Rack travel in m: 10.10...10.20

3rd pressure hPa : 310

Rack travel in m: 8.80...9.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed man : 980

Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.G)

Ameroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 117.0...119.0

1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 25B Rack travel in mm : 6.60...6.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA Edition : 27,11.92 : 10.92 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 956

Injection pump

Pump designation: PE6P12OA32ORS3196 EP type number : 0 411 826 763

Governor

Governor design. : RQV200...1100PA729-4

Governer no. : 0 421 813 950

Customer-spec. information Customer : SCANIA

Engine : DSC9 10

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 104

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm: 10.50...10.60

Del.quantity cm3/: 13.2...13.4

100 s: (12.9...13.7)

Spread cm3 : 0.8

100 s: (1.2)

rpm : 250.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.2...1.6

100 s: (-) Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 0.70...1.10 travel mm

2nd speed rpm : 350

travel mm : 2.00...2.60

3rd speed rpm : 650

: 4.90...5.50 travel mm

rpm : 1145 4th speed

: 8.30...8.50 travel mm

rpm : 1250 5th speed

: 9.20...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 152.0...137.0)

Spread cm3: 3.00

1000 : (12.00)

RATED SPEED

1st version Control Lever

position degrees: 111...119

Testing:

1st rack travel in: 9.50

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1235...1265 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 56...66

Testing:

Speed mpm : 100

Minimum rack trave: 6.20 Speed rpm : 250

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 320...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 Pressure hPa : 900

Rack travel mm : 10.50...10.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 350

Rack travel in m: 10.20...10.30 3rd pressure hPa : 320 Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1100 Del.quantity cm3/ : 128.0...136.0

1000 s: (126.0...138.0)

Aneroid pressure h: -

Speed rpm : 500 bel.quantity cm3/: 114.0...118.0

1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 110.0...130.0

1000 s: (-)

Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

 $3.2...3.4 \, \text{nm}$

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 i Edition : 11.06.92 : 18.09.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 958

Injection pump

Pump designation: PE6P120A720RS3291 EP type number : 0 411 826 800

Governor

Governor design. : RQV300...1000PA1016

Governer no. : C 421 813 964

Customer-spec. information Customer : IVECO-UNIC

: 8210.22.521 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 3.8...4.2

Del.quantity cm3/: 1.9...2.5 100 s: (1.6...2.8)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 7.70...7.90 travel mm

rpm : 300 2nd speed

: 1.10...1.50 travel mm

3rd speed rpm : 450

: 2.40...3.00 travel mm

4th speed rpm : 700

: 4.30...4.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1145 Speed

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

: 225.0...227.0 Del.quantity

1000 : (222.0...230.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testina:

1st rack travel in: 10.00

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1125...1155 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 57...65

Testing:

Speed rpm : 100 Minimum rack trave: 6.00

Speed rpm

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed : 300...420 **MQ1**

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 hPa : 700 Pressure

: 11.00...11.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 220

Rack travel in m: 10.30...10.40

3rd pressure hPa : 180

Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 500 Del.quantity cm3/: 224.0...228.0

1000 s: (221.0...231.0)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 155.0...157.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.80...4.20 Del.quantity cm3/: 19.0...25.0

1000 s: (16.0...28.3)

Spread

cm3 : 8.001000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 c Edition : 18.12.92 Replaces : 11.91 Test oil : ISO-4113

Combination no. : 0 401 846 960

Injection pump

Pump designation : PE6P110A320RS3265 EP type number : 0 411 816 778

Governor

Governor design. : RQV300...1100PA1(119K

Governer no. : 0 421 815 290

Customer-spec. information Customer

Engine : TD102KTE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm; 9.00...12.00

: 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 16.8...17.0

100 s: (16.6...17.2)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.4 Del.quantity cn3/ : 2.5...2.9 100 s: (2.3...3.1)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.90...1.30 travel mm

2nd speed rpm : 500

: 3.00...3.60 travel mm

3rd speed rpm : 900

travel mm : 7.30...7.70

rpm : 1150 4th speed

: 8.90...9.10 travel mm

rpm : 12605th speed

travel mm : 10.80...11.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100Aneroid pressure h: 1500

: 4.00 cm3

1000 : (7.50)

RATED SPEED

Spread

1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 12.40 rpm : 1160...1170 2nd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1350 Speed rom : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 67...75 Testina: Speed : 100 rpm Minimum rack trave: 6.80 rpm : 300 Rack travel in mm : 5.20...5.40 CONSTANT REGULATION rpm : 300...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 13.40...13.50 2nd speed rpm : 600 Rack travel in m: 13.10...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1100 COM Pressure hPa : 1500 Rack travel mm : 13.40...13.50 Measurement 1/min: 1100 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.20 2nd pressure hPa : 90 Rack travel in m: 10.20...10.30 3rd pressure hPa : 170 Rack travel in m: 12.60...12.80 START CUT-OUT

1/min: 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 rom : 600 Del.quantity cm3/: 174.0...178.0 1000 s: (172.0...180.0) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 116.0...118.0 1000 s: (113.0...121.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1160...1170 Speed STARTING FUEL DELIVERY Speed rom : 100 Del.quantity cm3/: 140.0...170.0 1000 s: (136.0...174.0) Rack travel in mm: 20.00...21.00 LOW IDLE Speed rpm : 300 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 25.0...29.0 1000 s: (23.0...31.0) Spread cm3 : 3.001000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: DAF

Edition

: 27.11.92

Replaces

: 10.92

Test oil

: ISO-4113

Combination no.

: D 401 846 964

Injection pump

Pump designation : PE6P110A320RS3302

EP type number

: 0 411 816 787

Governor

Governor design. : RQ300/1000PA1012-1

Governer no. : 0 421 801 648

Customer-spec. information Customer

: DAF

Engine

: LT 195 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0.6

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80 : (3.65...3.85)

Rack travel in mm: 14.00...15.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10

& maximum rack tra: 13.9...14.9

Difference * CS : 3.00...5.00

BASIC SETTING

1st speed

rpm: 850

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.7)

Spread

2nd speed

cm3 : 0.4

100 s: (0.7)

rpm : 300.0

Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 1.6...2.1

Spread

100 s: (1.4...2.4) cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850 Aneroid pressure h: 1000

Del.quantity

: 173.0...175.0 1000 : (170.5...177.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point: Speed

rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40 Speed rpm : 1025...1040 2nd rack travel in: 4.00 rpm : 1105...1135 Speed

4th rack travel in: 1300 Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 10.00 rpm : 300

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00 Speed : 330...370 rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.10...15.20 2nd speed rpm : 1000 Rack travel in m: 15.00...15.20

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 600 hPa : 1000 Pressure

Rack travel mm : 14.40...14.50

Measurement

1/min : 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 530

Rack travel in m: 14.00...14.10 3rd pressure hPa : 380

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.5...135.5)

BREAKAWAY

1st version

K26

1mm rack travel less than

full load rack tr: 13.40

rpm : 1025...1040 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...370.0

1000 s: (327.0...373.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 300

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 16.5...21.5 1000 s: (14.0...24.0)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks : VOL Test sheet Phasina : 0-60-120-180-240-300 Edition : 18.12.92 Replaces : 10.92 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 968 BASIC SETTING Injection pump Pump designation : PE6P11DA32DRS3197 1st speed rpm : 700EP type number : 0 411 816 752 Governor Rack travel in mm : 11.90...12.00 Governor design. : RQV300...1100PA589-4 : 0 421 814 022 Governer no. Del.quantity cm3/: 16.7...16.9 Customer-spec. information 100 s: (16.4...17.2) Customer : VME cm3 : 0.4Spread Enaine : 10102 KF 100 s: (0.7) 1st version kW : 200.0 Rated speed : 2200 2nd speed rpm : 300.0 Rack travel in mm : 4.4...4.8 TEST BENCH REQUIREMENTS Del.quantity cm3/: 2.5...2.9 100 s: (2.2...3.2) Test oil Spread cm3 : 0.4inlet temp. °C : 38...42 100 s: (0.7) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Test nozzle holder travel mm : 1.00...1.40 assembly : 0 681 343 009 rpm : 350 2nd speed travel mm : 2.20...2.70 Openina 3rd speed rpm : 450 : 3.70...4.10 pressure, bar : 172...175 travel mm rpm : 750 4th speed travel mm : 6.30...6.70 Test Lines : 1 680 750 015 5th speed rpm : 1160 : 7.90...8.10 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 rpm : 1180 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 1000 Del.quantity : 107.u...172.0) : 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testina:

1st rack travel in: 10.90

Speed rpm: 1160...1170 2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350

Speed npm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 60...68

Testing:

Speed rpm : 100

Minimum rack trave: 5.90

rpm : 300

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1000

Rack travel mm : 11.90...12.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 200

Rack travel in m: 10.10...10.20

3rd pressure hPa : 440

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 127.0...129.0

1000 s: (124.0...132.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0

1000 s: (156,0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 13.00...14.00

Firing order : 1-5- 3- 6- 2- 4 Note remarks Test sheet : DAF : 21.01.93 Edition Replaces : 10.92 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 969 Tolerance + - ° : 0.50 (0.75) Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PE6P110A320RS3312 EP type number : 0 411 816 788 betw. rack trav. m: 5.50...5.70 Governor & maximum rack tra: 12.5...13.5 Governor design. : RQ300/1000FA1012-1 Difference ° CS : 4.00...6.00 : 0 421 801 648 Governer no. BASIC SETTING Customer-spec. information Customer : DAF 1st speed rpm: 850 Engine : LT 160 L Rack travel in mm : 13.00...13.10 1st version kW : 160.0 Del.quantity cm3/ : 14.1...14.3 Rated speed : 2000 100 s: (13.8...14.5) TEST BENCH REQUIREMENTS Spread cm3 : 0.4Test oil inlet temp. °C : 38...42 100 s: (0.7) Overflow valve 2nd speed rpm : 300.0: 1 417 413 025 Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 2.7...3.2 Inlet press., bar: 1.50 100 s: (2.5...3.5) Spread cm3 : 0.4Test nozzle holder 100 s: (0.7) : 1 688 901 101 assembly GUIDE SLEEVE POSITION Opening Control-Lever position pressure, bar : 207...210 Degree: -2 rpm : 600 Speed Orifice plate Rack travel in mm : 19.20...20.80 diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 089 1st version Speed rpm : 850 Outside diameter Aneroid pressure h: 1000 x Wall thickness : 141.0...143.0 Del.quantity x Length mm : 8.00x2.50x600 1000 : (138.5...145.5) : 4.00 Spread cm3 (A) Injection pump setting values 1000 : (7.50) Insp. values in parentheses Set equal delivery quant. RATED SPEED per values ____ 1st version BEGINNING OF DELIVERY Test pressure, bar: 25...27 Setting point:

Speed

: 600

rom

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.00 rpm : 1042...1052 Speed 2nd rack travel in: 4.00 Speed rpm: 1110...1140 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 9.90 rpm : 300 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 330...370 TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 14.10...14.20 2nd speed rpm : 1000 Rack travel in m: 14.00...14.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 **CDM** hPa : 1000 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.60...11.80 2nd pressure hPa : 360 Rack travel in m: 12.70...12.80 3rd pressure hPa : 270 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1042...1052

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 330.0...370.0 1000 s: (327.0...373.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 27.5...32.5 1000 s: (25.0...35.0)

cm3 : 4.50

1000 s: (7.50)

Remarks:

Spread

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be neached.

1st version

Aneroid pressure h: -

rpm : 600 Del.quantity cm3/: 108.5...110.5

1000 s: (106.0...113.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 9,6 x Edition : 05.10.92 Replaces : 04.91 Test oil : ISO-4113 : 0 401 848 792 Combination no. Injection pump Pump designation : PE8P120A920/5LS3208 EP type number : 0 411 828 721 Governor Governor design. : RQ325/1150PA879 Governer no. : 0 421 801 417 Customer-spec. information Customer : KHD Engine : BF8L513CP 1st version kW : 294.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.40...3.50 : (3.35...3.55) Rack travel in mm : 15.00...19.00 Firing order : 1- 8- 7- 2- 6- 5-4-3 Phasing : 0-45-90-135-180-225-270-315 : 0.50 (0.75)Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 18.9...19.1 100 s: (18.6...19.4) Spread cm3 : 0.6100 s: (1.0) rpm : 325.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.9Spread 100 s: (1.3) GUIDE SLEEVE POSITION Control-lever position Degree: - 7 rpm : 700 Speed Rack travel in mm : 14.70...16.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 900 : 189.0...191.0 Del.quantity 1000 : (186.0...194.0) : 6.00 Spread cm3 1000 : (10.00) RATED SPEED 1st version Setting point: Speed rpm : 700 Rack travel in mm: 15.5

Testing:

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

1st rack travel in: 11.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1260...1290 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 6.6

Testina:

rpm : 100 Speed Minimum rack trave: 8.10 rpm : 325

Rack travel in mm: 6.50...6.70

Rack travel in mm: 2.00

Speed rom : 400...440

CONSTANT REGULATION

rpm : 300...510 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.30...12.40

2nd speed rpm : 600

Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 400 Speed Pressure hPa : 900

Rack travel mm : 12.80...12.90

Measurement

1/min: 400 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 450

Rack travel in m: 11.00...11.10

3rd pressure hPa : 590

Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: nom : 400

Del.quantity cm3/ : 104.0...106.0

1000 s: (101.0...109.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 119G...i200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 165.0...195.0

1000 s: (160.0...200.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 28.06.91 Replaces : ISO-4113 Test oil Combination no. : 0 401 849 752 Injection pump Pump designation : PE10P110A920/5LS3276 EP type number : 0 411 819 712 Governor Governor design. : RQV350...1150PA997 Governer no. : 0 421 813 927 Customer-spec. information Customer : KHD : F 10L513 Engine 1st version kW : 223.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x1.50x600 x Lenath mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

Rack travel in mm : 9.00...12.00

: 3.10...3.20 : (3.05...3.25)

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm

: 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 9.90...10.00 Del.quantity cm3/: 10.8...11.0 100 s: (10.5...11.3) cm3 : 0.4Spread 100 s: (0.7) rpm : 350.02nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.2...1.7 100 s: (1.0...2.0) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed : 2.30...2.70 travel mm rpm : 510 2nd speed : 3.60...4.10 travel mm 3rd speed rpm : 870 : 7.40...7.90 travel mm 4th speed rpm : 1200 : 9.90...10.40 travel mm rpm : 1300 5th speed : 10.90...11.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1250 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 Speed Del.quantity : 100.0....113.0)

Firing order

Phasing

: 1- 10- 9- 4- 3- 6-5- 8- 7- 2

: 0-27-72-99-144-171-216-243-288-315

cm3 : 4.00Spread 1000 : (7.50)

RATED SPEED

1st version Control lever position degrees: 98...106

Testing:

1st rack travel in: 8.90 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever position degrees: 69...75

Testing: rpm : 100 Speed Minimum rack trave: 7.10 Speed rpm : 350

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION rpm : 300...420 Speed

START CUT-OUT

 $1/\min: 220(0)$ Speed

FUEL DELIVERY CHARACTERISTICS

1st version Speed

rpm : 700 Del.quantity cm3/: 100.0...104.0 1000 s: (97.0...107.0)

Spread cm3 : 6.001000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90 rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE

rpm : 350 Speed Rack travel in mm : 4.40...4.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MWM 21,6 A1 Edition : 26.04.91 : 11.86 Replaces Test oil : ISO-4113 Combination no. : 0 401 870 089 Injection pump Pump designation : PE12P12OA520/5RS428-EP type number : 0 411 820 034 Governor Governor design. : RSUV300...750P10A356 Governer no. : 0 421 829 103 Customer-spec. information Customer Engine : D234V12 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000 (A) Injection pump setting values

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-2-9-10-5-6-11-12-3-4-7-8

Phasing : 0-30-60-90-120-150-180-210-240-270-300-330

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 750

Rack travel in mm: 9.70...9.80

Del.quantity cm3/ : 17.1...17.5

100 s: (16.8...17.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.8...3.6

100 s: (2.5...3.9)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm: 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

RATED SPEED

1st version Control lever

position degrees: 89...97

Testing:

1st rack travel in: 8.70 Speed rpm: 790...800 2nd rack travel in: 4.00 Speed rpm: 800...830 4th rack travel in: 950 Speed rpm: 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 62...70
Setting point w/out bumper spring

Speed rpm: 300

Rack travel in mm: 5.5 Speed rom : 300

Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 310...370

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 9.70...9.80

2nd speed rpm : 450 Rack travet in m: 9.70...9.80

3rd speed rpm : 310 Rack travel in m: 11.00...11.60

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 790...800

Remarks:

Full-load delivery is set on engine according to engine test report.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,6012 Edition : 27.11.92 Replaces : 07.91 Test oil : ISO-4113 Combination no. : 0 401 876 296 Injection pump Pump designation: PE6F120A320RS415-1 EP type number : 0 411 826 123 Governor Governor design. : RSV250...1100P5A508 Governer no. : 0 421 833 195 Customer-spec. information Customer : DAF Engine : DKX 1160 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina (pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm

: 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 106...114

Testing:

1st rack travel in: 10.60 rpm : 1135...1145 Speed 2nd rack travel in: 4.00

rpm : 1200...1230 Speed

3rd rack travel in: 4.00

rsm : 1270...1300 Speed

4th rack travel in: 1430

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring Speed rpm : 250

Rack travel in mm: 6.0

Testing:

Speed rpm : 100 rpm : 250 Speed

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 600...700

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.60...12.80

2nd speed nom : 400

Rack travel in m: 12.60...12.80

3rd speed rpm : 300

Rack travel in m: 12.90...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 11.60...11.70

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40

3rd pressure hPa : 255

Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 140.0...142.0

1000 s: (137.5...144.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1135...1145 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 310.0...350.0

1000 s: (306.0...354.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.40...5.60

Remarks:

L10

Note remarks

Test sheet : VOL 7,1 c 1 Edition : 18.12.92 Replaces : 10.89 Test oil : ISO-4113

Combination no. : 0 401 876 322

Injection pump

Pump designation : PE6P110A320RS497 EP type number : 0 411 816 165

Governor

Governor design. : RSV200...1200P1A374

-2

: 0 421 833 205 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TID 71A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 200.0 2nd speed Rack travel in mm: 5.2...5.4

Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.70

Speed rpm : 1210...1220

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 13...21 Setting point w/out bumper spring

rpm : 200 Rack travel in mm: 4.8

Speed rpm : 200 Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

rpm Speed : 280...340

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1200

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 900

Rack travel in m: 12.40...12.50

3rd pressure hPa : 380

Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 700

Del.quantity cm3/: 82.0...84.0

1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1210...1220

STARTING FUEL DELIVERY

LOW IDLE

L12

Speed rpm : 200
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)

cm3 : 3.00Spread 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : PEN 6,1 q 1 Test sheet Edition : 18.12.92 Replaces : 10.92 Test oil : ISO-4113 Combination no. : 0 401 876 340 Injection pump Pump designation : PE6P110A320RS499 EP type number : 0 411 816 169 Governor Governor design. : RSV325...1400P0A374 : 0 421 833 335 Governer no. Customer-spec. information Customer : PENTA Engine : TAMD61 1st version kW : 221.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38, . . 42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values

Insp. values in parentheses

: 2.40...2.50

: (2.35...2.55)

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm : 10001st speed Rack travel in mm : 11.10...11.20 Del.quantity cm3/: 11.9...12.1 100 s: (11.7...12.3) cm3 : 0.4Spread 100 s: (0.7) rpm : 325.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.7) Spread cm3 : 0.3100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 6.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 900 Del.quantity : 779.0...123.0) Spread : 4.00 cm3 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.10 rpm : 1450...1460 Speed

2nd rack travel in: 4.00

rpm : 1525...1555 Speed

4th rack travel in: 1630

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Setting point w/out bumper spring

הוכרו : 325 Rack travel in mm: 3.7 Speed CDM : 325

Rack travel in mm : 3.60...3.80 Rack travel in mm : 2.00

rom : 450...510 Speed

Aneroid/Altitude Compensator Yest

1st version

Setting Speed

: 500 L CW hPa : 900 Pressure

Rack travel mm : 11.00...11.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 370

Rack travel in m: 9.10...9.20 3rd pressure hPa : 720 Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1400 Speed

Del.quantity cm3/: 121.0...125.0 1000 s: (118.0...128.0)

Aneroid pressure h: -

Speed rpa : 500

Del.quantity cm3/: 61.0...63.0

1(100 s: (58.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0 1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0)

cm3 : 3.00 1000 s: (6.00) Spread

Remarks:

APPLICATION

Navy

Note remarks

Test sheet

: PEN

Edition

: 21.01.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 876 345

Injection pump

Pump designation : PE6P120A320RS3301

EP type number

: 0 411 826 805

Governor

Governor design.

: RSV250...1100P0A374

-12

Governer no.

: 0 421 833 375

Customer

Customer-spec, information : PENTA

Erigine

: TAMD 102 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.40...3.50

: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - *

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

Spread

rom: 1100

Rack travel in mm: 12.70...12.80

Del.quantity cm3/: 26.6...26.8

100 s: (26.3...27.1)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.1...2.6

100 s: (1.8...2.8)

cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 266.0...268.0

1000 : (263.0...271.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.70

rpm : 1115...1125 Speed

L15

2nd rack travel in: 4.00 rpm : 1175...1205 Speed 3rd rack travel in: 4.00 rpm : 1185...1215 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 65...73 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.6 : 250 Speed **CDU** Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 Speed CDM : 340...400 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 LDW. hPa : 1500 Pressure : 12.70...12.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.10...8.30 2nd pressure hPa : 160 Rack travel in m: 8.30...8.40 3rd pressure hPa : 980 Rack travel in m: 11.90...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 700 Speed Del.quantity cm3/: 284.0...290.0 1000 s: (281.0...293.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) BREAKAWAY

Speed rpm : 1115...1125
LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 21.0...26.0
1000 s: (18.5...28.5)

Remarks:

Spread

Delivery-valve spring pre-tension 3.2...3.4 mm.
Permissible alteration of 3.0...3 5 mm

cm3 : 5.00

1000 s: (7.00)

Below-ground operation

...

1st version 1mm rack travel less than

full load rack tr: 11.70

L16

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN Edition : 09.02.93 Replaces Test oil : ISO-4113 Combination no. : 0 401 876 745 Injection pump Pump designation : PE6P110A320RS3152 EP type number : 0 411 816 746 Governor Governor design. : RSV200...1100P1A515 Governer no. : 0 421 833 209 Customer-spec. information Customer : VOLVO-PENTA Engine : TD100G TEST BENCH REQUIREMENTS Test oil inlet temp. *C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1- 5- 3- 6- 2- 4 L17

Phasina : 0-60-120-180-240-300 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 12.60...12.70 Del.quantity cm3/: 17.5...17.7 100 s: (17.2...18.0) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 4.0...4.2 Del.quantity cm3/ : 1.8...2.2 100 s: (-) Spread cm3 : 0.3100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000 : 175.0...177.0 Del.quantity 1000 : (172.0...180.0) Spread cm3 : 4.00 1000 : (7.50)RATED SPEED 1st version Control lever position degrees: 53...61 Testing: 1st rack travel in: 11.60 rpm : 1160...1170 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1340 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm : 3.6 Speed rpm : 250

Rack travel in mm : 4.00...4.20

Rack travel in mm : 2.00 Speed COM : 290...350

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1000 Speed riom Pressure

Rack travel mm : 12.60...12.70

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...9.90

2nd pressure hPa : 640

Rack travel in m: 12.40...12.50 3rd pressure hPa : 250

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 122.0...124.50 1000 s: (119.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 160.0...190.0

1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.00...4.20

Del.quantity cm3/: 18.0...22.0 1000 s: (-) Spread cm3: 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

L18

Note remarks

Test sheet : PEN 12,1 b4

Edition : 18.12.92

Replaces : 10.91 Test oil : ISO-4113

Combination no. : 0 401 876 789

injection pump

Pump designation : PE6P12OA32ORS3189

EP type number : 0 411 826 759

Governor

Governor design. : RSV650...750P4A421-9

: 0 421 833 364 Governer no.

Customer-spec. information Customer : PENTA

Engine : TD710G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.60...2.70 : (2.55...2.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 8.00...8.10

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 3.1...3.3 Del.quantity cm3/ : 1.9...2.5

100 s: (1.7...2.7)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 161.0...163.0 Del.quantity

1000 : (158.0...166.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 7.00

rpm : 750...755 Speed

2nd rack travel in: 4.00

Speed rpm : 772...785 4th rack travel in: 900

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 85...93

Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm : 3.2

Speed rpm : 650
Rack travel in mm : 3.10...3.30
Rack travel in mm : 2.00 Speed rpm : 630...690

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.00 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 480.0...520.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm : 3.10...3.30 Del.quantity cm3/ : 19.0...25.0 1000 s: (17.0...27.0)

cm3 : 5.00 1000 s: (7.00) Spread

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : PEN

Edition : 21.01.93

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 794

Injection pump

Pump designation : PE6P12DA32ORS32O6

EP type number : 0 411 826 773

Governor

Governor design. : RSV250...1100P1A560

Governer no. : 0 421 833 398

Customer-spec, information

Customer : PENTA

Engine : TAD 730 P

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 8.80...8.90

Del.quantity cm3/: 17.9...18.1

100 s: (18.6...19.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 179.0...181.0

1000 : (186.0...194.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 7.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1180...1210 4th rack travel in: 1300 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 78...86 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.2 Speed rpm : 250 Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 Speed rpm : 300...360 Aneroid/Altitude Compensator Test 1st version Setting Speed : 700 rpm Pressure hPa : 1200 : 8.80...8.90 Rack travel mm Measurement Speed 1/min : 700 1st pressure hPa : -Rack travel in m: 7.10...7.30 2nd pressure hPa : 150 Rack travel in m: 7.30...7.40 * FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 7.80 Speed rpm : 1140...1150 Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

* Increase in control-rod travel with

respect to setting at least 0.1 mm

L22

Note remarks

Test sheet

Edition : 03.02.93

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 796

Injection pump

Pump designation : PE6P12OA32OLS3815-13

EP type number : 0 411 826 782

Governor

Governor design. : RSV675...1050P0A820

-12

: 0 421 833 401 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 162.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 1080

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 15.9...16.1

100 s: (15.6...16.4)

Spread

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm: 3.1...3.7

Del.guantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1080Del.quantity

: 159.0...161.0 1000 : (156.0...164.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 89...97

Testina:

1st rack travel in: 9.50

Speed rpm : 1110...1120

2nd rack travel in: 4.00

Speed rpm : 1140...1158 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

rpm : 675 Rack travel in mm : 3.4

Testing:

rpm : 100 Speed

Minimum rack trave: 19.50

rom : 675

Rack travel in mm : 3.30...3.50

Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING

Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1080 1st speed

Rack travel in m: 10.50...10.60

2nd speed rpm : 700

Rack travel in m: 12.50...12.70

3rd speed rpm : 975 Fack travel in m: 11.30...11.50

4th speed rpm : 500

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 201.0...205.0 1000 s: (198.0...208.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1110...0

4th version

1mm rack travel less than

full load rack tr: 9.50

rpm : 1110...1120 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0

1600 s: (186.0...214.0)

Remarks:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

Note remarks

Test sheet

Edition

: 05.02.93

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 876 797

Injection pump

Pump designation : PE6P12DA32OLS3815-13

EP type number

: 0 411 826 782

Governor

Governor design.

: RSV350...1000P0A827

Governer no.

: 0 421 833 402

Customer-spec, information

Customer

: MERCEDES-BENZ

Engine

; OM441A

1st version kW

: 177.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 105...125

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.60...3.70

: (3.55...3.75) Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

Spread

2nd speed

Spread

Speed

rpm: 980

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.6)

cm3 : 0.5

100 s: (0.9)

rpm : 350.0

Rack travel in mm: 4.7...5.3

Del.quantity cm3/: 1.4...2.2

100 s: (1.1...2.5)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 980

Del.quantity

: 171.0...173.0

1000 : (168.0...176.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

L25

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.00 Speed rpm: 1030...0 2nd rack travel in: 4.00 Speed rpm: 1100...0 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 72...89
Setting point w/out bumper spring
Speed rpm : 350

Speed rpm : 350 Rack travel in mm : 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 380...440

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 700

Del.quantity cm3/: 172.0...176.0

1000 s: (169.0...179.0)

Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm ; 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

Remarks:

: LIEBHERR-TELFS

Note remarks

Test sheet : LIE

Edition : 03.04.92

Replaces

Test oil : ISO-4113

Combination no. : 0 401 878 714

Injection pump

Pump designation : PE8P110A320LS3853 EP type number : 0 411 818 720

Governor

Governor design. : RSV400...900P1A544

Governer no. : 0 421 833 326

Customer—spec. information Customer : LIEBHERR

Engine : D 9308 T

1st version kW : 260.8 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1

: 1-8-7-2-6-3-

5- 4

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - ° :

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 890

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 17.5...17.8

100 s: (17.2...18.0)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 890

Del.quantity : 175.0...178.0

1000 : (172.5...180.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 12.80

Speed rpm : 930...940

2nd rack travel in: 4.00

rpm : 945...975 Speed 3rd rack travel in: 4.00 Speed rpm : 950...980 4th rack travel in: 1120 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.4 Speed rpm : 400 Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 Speed rpm : 450...510 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 890 Rack travel in m: 13.80...13.90 2nd speed rpm : 500 Rack travel in m: 13.80...14.00 3rd speed rpm : 420 Rack travel in m: 15.00...15.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 176.0...184.0 1000 s: (173.0...187.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 Speed rpm : 930...940 STARTING FUEL DELIVERY Speea rpr : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 13.0...18.0 **1000** s: (10.5...20.5) Spread cm3 : 4.501000 s: (7.50)

L28

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.80...3.90 : (3.75...3.95) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-8-7-2-6-3-Test sheet : LIE : 31.07.92 Edition Replaces Test oil : ISO-4113 : 0-45-90-135-180-225-Phasing Combination no. : 0 401 878 717A 270-315 : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation: PE8P110A320LS3853-1 BASIC SETTING EP type number : 0 411 818 726 Governor 1st speed rpm: 900 Governor design. : RSV400...1000P1A554 : 0 421 833 376 Governer no. Rack travel in mm : 14.60...14.70 Cust part no. : 9273614 Del.quantity cm3/: 19.6...19.8 Customer-spec. information 100 s: (19.3...20.1) Customer : LIEBHERR cm3 : 0.4Spread Engine : D 9308 TI 100 s: (0.7) 1st version kW : 288.0 Rated speed : 2000 rpm : 400.02nd speed Rack travel in mm: 5.8...6.0 TEST BENCH REQUIREMENT'S Del.quantity cm3/: 1.2...1.8 100 s: (0.9...1.2) cm3 : 0.6 100 s: (1.0) Test oil Spread inlet temp. °C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Rack travel in mm : 0.30...0.70 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : ? Open ina pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 089 Speed rpm : 900 Aneroid pressure h: 1500 Outside diameter : 196.0...198.0 Del.quantity x Wall thickness 1000 : (193.0...201.0) x Length mm : 8.00x2.50x600 Spread cm3 : 4.00 1000 : (7.50)(A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values 1st version Control Lever BEGINNING OF DELIVERY position degrees: 95...103 Test pressure, bar: 25...27 Testing:

1st rack travel in: 13.60

rpm : 940...950 Speed 2nd rack travel in: 4.00 rom : 985...1015 Speed 3rd rack travel in: 4.00 rpm : 1010...1040 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 72...78 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 : 400 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 490...550 TORQUE CONTROL Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 14.60...14.70 rpm : 500 2nd speed Rack travel in m: 14.60...14.80 3rd speed rpm : 350 Rack travel in m: 15.80...16.40 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 1500 Pressure Rack travel mm : 14.60...14.70 Measurement $1/\min:600$ Speed 1st pressure hPa : -Rack travel in m: 13.60...13.80 2nd pressure hPa : 760 Rack travel in m: 14.20...14.40 3rd pressure hPa : 690 Rack travel in m: 13.90...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 550 Del.quantity cm3/: 171.0...173.0 1000 s: (168.0...176.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 940...950

STARTING FUEL DELIVERY

rom : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0) Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 12.0...18.0

1000 s: (9.0...12.0)

Spread cm3 : 6.001000 s: (10.00)

Remarks:

MO2

Note remarks

Test sheet

: LIE Edition

Replaces

: 27.11.92

: 06.92

Test oil

: ISO-4113

Combination no. : 0 401 878 717B

Injection pump

Pump designation : PE8P110A320LS3853

EP type number

: 0 411 818 720

Governor

Governor design. : RSV400...1000P1A554

Governer no. : 0 421 833 376

Customer-spec. information

Customer

: LIEBHERR

Engine

: D 9308 T

1st version kW

: 255.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina .

pressure, bar : 207...210

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

MO3

Firing order

: 1-8-7-2-6-3-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 16.6...16.8

100 s: (16.3...17.1)

Spread

Spread

cm3 : 0.4

100 s: (0.7)

rpm : 400.0 2nd speed

Rack travel in mm: 5.9...6.1

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1) cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 900

Aneroid pressure h: 1500

Del.quantity : 100.0...171.0)

: 4.00

cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 12.40

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed

rpm : 980...1020

3rd rack travel in: 4.00

rpm : 1020...1040 Speed

4th rack travel in: 1100

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 75...83

Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.7

Speed rpm : 400 Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00

rpm : 430...490 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.40...13.50

2nd speed rpm : 500

Rack travel in m: 13.40...13.60

3rd speed rpm : 350 Rack travel in m: 14.60...15.20

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 550 rom

hPa : 1500 Pressure

: 13.40...13.50 Rack travel mm

Measurement

1/min: 550 Speed

1st pressure hPa : -

Rack travel in m: 12.50...12.60

2nd pressure hPa : 620

Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 550 Speed

Del.quantity cm3/: 152.0...154.0

1000 s: (149.0...157.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Rack travel in mm : 20.00...21.00

LOW TOLE

ripm: : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 6.00

1000 s: (10.00)

Remarks:

M04

Note remarks

Test sheet : MAN 10,0 e1 Edition : 11.01.93 : 12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 035 028

Injection pump

Pump designation: PES5P120A720/3LS528

EF type number : 0 412 025 022

Governor

Governor design. : RQV325...1000PA876

-10

: 0 421 813 900 Governer no.

Customer-spec. information Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 13.00...14.00

: 1-3-5-4-2 Firing order

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rom: 1000

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 9.60...9.80 travel mm

rpm : 325 2nd speed

: 0.70...1.10 travel mm

3rd speed rpm : 550

travel mm : 3.50...4.10

4th speed rpm : 800

: 6.50...6.90 travel mm

5th speed rpm : 1300

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

M05

Aneroid pressure h: 1000 : 220.0...222.0 Del.quantity 1000 : (217.0...225.0) Spread cm3: 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 10.60 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 252...260 Testing: Speed : 100 rpm Minimum rack trave: 6.10 : 300 rom Rack travel in mm : 4.40...4.60 CONSTANT REGULATION rpm : 340...460 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1000 Pressure Rack travel mm : 11.60...11.70 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 150

Rack travel in m: 9.60...9.70

3rd pressure hPa : 390

Rack travel in m: 10.90...11.20

FUEL DELIVERY CHARACTERISTICS

1/min : 245 (265)

1st version Aneroid pressure h: 1000 : 750 Speed rpm Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 1000 rpm : 550 Speed Del.quantity cm3/: 209.0...217.0 1000 s: (206.0...220.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1040...1050 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE Speed rpm : 325 Rack travel in mm : 4.30...4.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : MAN-NR. 3-7122 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Speed

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 10,0 d1 : 11.01.93 Edition : 07.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 035 029 Injection pump Pump designation : PES5P120A720/3LS528 EP type number : 0 412 025 022 Governor Governor design. : RQ325/1000PA813-20 : 0 421 801 567 Governer no. Customer-spec. information Customer : MAN Engine : D2865LF/LU05 1st version kW : 198.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075 Outside diameter

x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 13.00...14.00 Firing order : 1-3-5-4-2 Phasing : 0-72-144-216-288 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 5 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 22.0...22.2 100 s: (21.7...22.5) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 325.0Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1000 Speed Aneroid pressure h: 1000 Del.quantity : 220.0...222.0 1000 : (217.0...225.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Setting point: : 600 Speed rom Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.60

: 1045...1060 Speed COM 2nd rack travel in: 4.00 rpm : 1120...1150 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 4.5 Testing: Speed : 100 rpm Minimum rack trave: 6.00 : 325 rpm Rack travel in mm : 4.40...4.60 Rack travel in mm : 2.00 Speed : 360...400 rpm TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 12.10...12.20 1st speed rpm : 550 2nd speed Rack travel in m: 12.50...12.90 3rd speed rpm : 825 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed man Pressure hPa : 1000 Rack travel mm : 11.60...11.70 Measurement 1/min : 500Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 150 Rack travel in m: 9.60...9.70 3rd pressure hPa : 390 Rack travel in m: 10.90...11.20 START CUT-OUT

1/min : 245 (265)

: 750

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1000

rpm

Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 1000 Speed rpm : 550
Del.quantity cm3/: 209.0...217.0
1000 s: (206.0...220.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1045...1060 STARTING FUEL DELIVERY Speed നുന : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE rpm : 325 Speed Rack travel in mm : 4.30...4.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7121 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Speed

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Note remarks Rack travel in mm : 14.50...15.50 : 6-2-4-1-5-3 Firing order Test sheet : MAN 11,9 u2 Edition : 09.02.93 Replaces : 21.09.90 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 036 736 Tolerance + - ° : 0.50 (0.75)Injection pump Time to cyl. no. : 6 Pump designation: PES6P120A720/3LS3255 EP type number : 0 412 026 739 BEGINNING OF DELIVERY DIFFERENCE Governor betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Governor design. : RQ300/1100PA813-12 Governer no. : 0 421 801 518 Difference * CS : 2.00...4.00 Customer-spec. information Customer : MAN BASIC SETTING Engine : D2866LF01 1st speed rpm: 700 1st version kw : 273.0 Rack travel in nm : 15.00...15.10 Rated speed : 2200 Del.quantity cm3/: 24.2...24.4 TEST BENCH REQUIREMENTS 100 s: (23.9...24.7) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.5Overflow valve 100 s: (0.9) : 1 417 413 025 rpm : 300.02nd speed Inlet press., bar: 1.50 Rack travel in mm: 5.0...5.4 Del.quantity cm3/: 1.7...2.3 Test nozzle holder 100 s: (1.4...2.6) assembly : 1 688 901 019 Spread cm3 : 0.8100 s: (1.2) Openina | pressure, bar : 207...210 GUIDE SLEEVE POSITION Control-lever position Orifice plate Degree: -2 diameter mm rpm : 600 : 0,8 Speed Rack travel in mm : 19.20...20.80 Test lines : 1 680 750 067 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 700x Length mm : 6.00x1.50x1000 Aneroid pressure h: 1200 : 242.0...244.0 Del.quantity (A) Injection pump setting values 1000 : (239.0...247.0) Insp. values in parentheses Spread cm3 : 5.00 Set equal delivery quant. 1000 : (9.00) per values RATED SPEED BEGINNING OF DELIVERY

1st version

Test pressure, bar: 30...32

Setting point: Speed : 600 שכלט Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.80 Speed rom : 1145...1160 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm : 5.2 Testina: Speed rpm : 200 Minimum rack trave: 6.70 : 300 rpm Rack travel in mm: 5.10...5.30 Rack travel in mm: 2.00 Speed rpm: 360...400 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.80...14.90 2nd speed rpm : 700 Rack travel in m: 15.40...15.60 3rd speed rpm : 900 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 non Pressure hPa : 1200 Rack travel mm : 15.00...15.10 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 11.60...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 14.00...14.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

M10

1st version Aneroid pressure h: 1200 Speed : 1100 man Del.quantity cm3/: 230.0...236.0 1000 s: (227.0...239.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 1145...1160 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.00...5.40 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : MAN-NR. 2-7889

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Note remarks Rack travel in mm : 14.50...15.50 : 6-2-4-1-5-3 Firing order Test sheet : MAN 11,9 u1 : 21.01.93 Edition Replaces : 03.92 Test oil : ISO-4113 Phasing : (-60-120-180-240-300 Combination no. : 0 402 036 740 Tolerance $+ - \circ : 0.50 (0.75)$ Injection pump Time to cyl. no. : 6 Pump designation : PESSP120A720/3LS3255 EP type number : 0 412 026 739 BASIC SETTING Governor Governor design. : RQ300/1000PA813-13 1st speed rpm: 700 Governer no. : 0 421 801 529 Rack travel in mm: 15.00...15.10 Customer-spec, information Customer : MAN Del.quantity cm3/: 24.2...24.4 Engine : D2866LF03 100 s: (23.9...24.7) 1st version kW : 273.0 Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 4.9...5.3 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8 Overflow valve Spread : 1 419 992 198 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 300: 1.60...2.10 Opening travel mm pressure, bar : 207...210 2nd speed : 550 rpm : 5.90...6.10 travel mm Orifice plate 3rd speed : 900 rpm diameter mm : 0,8 : 6.10...6.30 travel mm 4th speed rpm : 1070 : 6.60...7.10 travel mm Test lines : 1 680 750 075 5th speed : 1175 rpm : 10.10...10.60 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x1000 Control-lever position Degree: -2 (A) Injection pump setting values rpm : 550 Speed Insp. values in parentheses Rack travel in mm : 19.20...20.80 Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...247.0) : 5.00 1000 : (9.00) RATED SPEED 1st version Setting point: CDM : 550 Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.80 rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed r_{DM} : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring man : 300 Rack travel in mm : 5.0 Testina: Speed : 200 CDW. Minimum rack trave: 6.50 : 300 Speed Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed nom. : 360...400 TORQUE CONTROL Dimension a mm :? rpm : 1000 1st speed Rack travel in m: 15.00...15.10 2nd speed nom : 700 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mon hPa : 1200 Pressure Rack travel mm : 15.00...15.10

Torque control curve - 1st version Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 M12

Rack travel in m: 13.70...14.10 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 1000 Del.quantity cm3/: 241.0...245.0 1000 s: (238.0...248.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quaritity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 Speed rpm : 1045...1060 STARTING FUEL DELIVERY

Speed rpm : 100 Dei.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3,85) Rack travel in mm : 14.50...15.50 Note remarks : 6-2-4-1-5-3 Firing order : MAN 11,9 u5 Test sheet Edition : 18.12.92 : 08.92 Replaces Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 036 743 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720/3LS3255 : 0 412 026 739 EP type number BASIC SETTING Governor Governor design. : RQ300/1000PA813-19 1st speed rpm: 700 : 0 421 801 561 Governer no. Rack travel in mm : 15.10...15.20 Customer-spec. information Customer : MAN Del.quantity cm3/: 24.4...24.6 : D2866LF05 Engine 100 s: (24.1...24.9) 1st version kW : 272.0 Spread cm3 : 0.5Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 4.8...5.2 inlet temp. *C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve cm3 : 0.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 assembly rpm : 550 Speed Rack travel in mm : 19.20...20.80 Openina pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 rpm : 700 Speed Aneroid pressure h: 1200 Del.quantity : 244.0...246.0 Test lines : 1 680 750 075 1000 : (241.0...249.0) : 5.00 Spread cm3Outside diameter 1000 : (9.00) x Wall thickness : 8.00x2.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values _ rom Rack travel in mm : 20.0 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testing: 1st rack travel in: 14.10

Speed rpm : 1045...1060

2nd rack travel in: 4.00

rpm : 1155...1185 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed : 300 mgn. Rack travel in mm: 5.0

Testing:

Speed mom : 200 Minimum rack trave: 6.50 Speed rpm : 300

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

rpm : 360...490 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 15.10...15.20 2nd speed rpm : 700

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Settina

Speed שכני : 500 hPa : 1200 Pressure

Rack travel mm : 15.10...15.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.80...12.00
2nd pressure hPa : 110
Rack travel in m: 12.10...12.20
3rd pressure hPa : 470

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 1000

Del.quantity cm3/: 241.0...247.0

1000 s: (238.0...250.0)

Aneroid pressure h: -

M14

Speed rpm : 500 Det.quaritity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

: 300 Speed rom

Rack travel in mm : 4.80...5.20

Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7037

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 Note remarks Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 Test sheet : MAN : 18.12.92 Edition : 07.92 Replaces Test oil : ISO-4113 Combination no. : 0 402 036 752 : 0-60-120-180-240-300 Phasing Phasing Tolerance + - ° Injection pump : 0.50 (0.75)Pump designation : PES6P120A720/3LS3255 Time to cyl. no. : 6 EP type number : 0 412 026 756 Governor BASIC SETTING : RQV300...1000PA876 Governor design. -131st speed rpm : 700 : 0 421 814 010 Governer no. Rack travel in mm : 14.70...14.80 Customer-spec, information Customer : MAN Del.quantity cm3/: 23.3...23.5 Engine : D2866LE102 100 s: (23.0...23.8) 1st version kW : 260.0 Spread cm3 : 0.5 Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENT'S 2nd speed rpm : 300.0Test oil Rack travel in mm : 4.8...5.2 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve cm3 : C.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rom : 1045: 9.90...10.10 **Opening** travel mm pressure, bar : 207...210 rpm : 300 2nd speed : 1.50...1.70 travel mm Orifice plate 3rd speed : 500 rpm diameter mm : 0,8 travel mm : 3.30...3.90 : 800 4th speed rpm travel mm : 6.80...7.20 Test lines : 1 680 750 075 5th speed : 1300 rpm : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1110 Insp. values in parentheses Rack travel in mm : 12.40...15.00 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

M15

rpm : 700 Speed Ancroid pressure h: 1200

: 233.0...235.0 Del.quantity

1000 : (230.0...238.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 294...302

Testing:

1st rack travel in: 13.70

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 251...259

Testing:

Speed : 200 rpm Minimum rack trave: 6.50 : 300 L DUI

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rom : 290...400 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 14.70...14.80

2nd speed rpm : 1000

Rack travel in m: 14.50...14.70

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rrom hPa : 1200 Pressure

Rack travel mm : 14.70...14.80

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.40...11.60

2nd pressure hPa : 210

Rack travel in m: 11.80...11.90

3rd pressure hPa : 570

Rack travel in m: 13.40...13.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm5/: 230.0...236.0

1000 s: (227.0...239.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7191

Setting and blocking of pointer of

start-of-delivery sensor on cyl. 6

start of delivery

APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : FIA

Edition : 03.04.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 046 079

Injection pump

Pump designation : PES6P120A820LS249 EP type number : 0 412 026 024

Governor

Governor design. : RGV300...1000PA204-4

R

Governer no. : 0 421 813 121

Customer-spec. information

Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 443 022

Opening

pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter x Wall thickness

x Length mm : 8.00x2.00x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 7.50...7.60

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.1

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

Spread cm3 : 0.6 100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1000

Speed rpm : 1000 Rack travel in mm : 15.20,...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Del.quantity : 122.0...124.0

1000 : (119.0...127.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testina:

1st rack travel in: 6.50

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

Speed rpm: 100
Minimum rack trave: 9.00
Speed rpm: 300
Rack travel in mm: 6.00...6.10
Rack travel in mm: 2.00

rpm : 415...475 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 6.50

Speed rpm : 1040...1050

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting soleroid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : RVI 9,8 a 6 Test sheet : 23.10.92 Edition : 09.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 313 Tolerance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS419 EP type number : 0 412 026 037 1st speed rpm : 1050Governor Governor design. : RQV275...1050PA495-8 Rack travel in mm : 10.40...10.50 : 0 421 813 482 Governer no. Del.quantity cm3/: 18.0...18.2 Customer-spec. information Customer : RVI 100 s: (17.7...18.5) : MIDSO62045 Engine Spread cm3 : 0.51st version kW : 169.0 100 s: (0.9) Rated speed : 2100 2nd speed rpm : 275.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.3...2.7 TEST BENCH REQUIREMENTS Test oil 100 s: (2.0...3.0) inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 250 : 1 688 901 105 assembly : 1.00...1.20 travel mm rpm : 450 2nd speed Opening. : 3.30...3.80 travel mm : 207...210 pressure, bar : 800 3rd speed rpm : 5.70...6.00 travel mm Orifice plate : 1050 4th speed rpm diameter mm : 0,8 : 7.60...7.80 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 089 Control-lever position Degree: -1 Outside diameter rpm : 1130 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 8.00x2.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1050 Speed per values Aneroid pressure h: 700 : 180.5...182.5 Del.quantity 1000 : (177.5...185.5) BEGINNING OF DELIVERY Test pressure, bar: 25...27 Spread cm3 : 5.00

1000 : (9.00)

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 9.40

rpm : 1125...1135 Speed

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rom : 175

Minimum rack trave: 6.80

Speed rpm : 275

Rack travel in mm : 5.20...5.40

CONSTAINT REGULATION

rpm : 275...390 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed

rpm : 500 hPa : 700 rom

Pressure

Rack travel mm : 10.40...10.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 360 Rack travel in m: 9.90...10.00 3rd pressure hPa : 160 Rack travel in m: 8.70...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 184.0...189.0

1000 s: (181.0...191.0)

Aneroid pressure h: -

M20

rpm : 500 Speed

Del.quantity cm3/: 112.5...114.5

1000 s: (109.5...117.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1125...1135 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 151.0...171.0

1000 s: (147.0...175.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 23.5...27.5

1000 s: (20.5...30.5)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle

after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1 Edition : 22.01.93 : 02.92 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump

Pump designation: PES6P120A320RS3139 EP type number : 0 412 026 718

Governor

Governor design. : RQV275...950PA728-1

Governer no. : 0 421 813 465

Customer-spec. information Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. *C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 5.2...5.6 Del.quantity cm3/: 2.2...2.6

100 s: (1.9...2.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

travel mm : 1.30...1.70 rpm : 450 2nd speed

: 3.30...3.70 travel mm

3rd speed : 800 rpm

travel mm : 5.60...6.00

950 4th speed i``pm

: 6.70...6.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 197.0...199.0

Aneroid F. Del.quantity 1000 : (194.0...202.0)

cm3 : 5.00Spread 1000 : (9.00)

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

Speed rpm : 1020...1030 2nd rack travel in: 4.00 Speed rpm : 1155...1185

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 200 Minimum rack trave: 7.10

rpm : 275

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 1000 Pressure

Rack travel mm : 12.50...12.60

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.10...9.50 2nd pressure hPa : 200 Rack travel in m: 10.00...10.10

3rd pressure hPa : 520

Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 950

Del.quantity cm3/: 198.0...204.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 118.0...120.0 1900 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 155.0...185.0 1900 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.20...5.60

Del.quantity cm3/: 22.0...26.0 1000 s: (19.0...29.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: KHD 9,6 n

Edition

: 11.01.93

Replaces

: 8.87

Test oil

: ISO-4113

Combination no. : 0 402 046 759

Injection pump

Pump designation : PES6P110A720RS3104

EP type number

: 0 412 016 712

Governor

Governor design. : RQ900PA738

Governer no.

: 0 421 801 278

Customer-spec. information

Customer

: KHD

Engine

: BF6L413FR/C

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openting

pressure, bar

: 172...175

Test Lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

Rack travel in mm : 9.00...12.00

: (2.75...2.95)

: 6-2-4-1-5-3

Firing order

Phasing

Time to cyl. no. : 6

BASIC SETTING

Tolerance + - °

1st speed

rpm: 850

Rack travel in mm : 12.60...12.70

: 0-60-120-180-240-300

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.2)

: 0.50 (0.75)

Spread

cm3 : 0.4

100 s: (0,7)

rpm : 300.0

2nd speed Rack travel in mm: 7.1...7.3

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.1)

Spread

cm3 : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity

: 147.0...149.0 1000 : (144.0...152.0)

Spread cm3

: 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

Speed

1st rack travel in: 11.60

rpm : 900...905

2nd rack travel in: 5.50

rpm : 936...945 Speed

4th rack travel in: 1050

rpm : 0.00...1.00Speed

START CUT-OUT

Speed

1/min: 750 (0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet · KHD 9,6 u 1 01.93 Edition Replaces : 10.88 Test oil : ISO-4113 Combination no. : 0 402 046 783 Injection pump Pump designation : PES6P110A720RS31C4 EP type number : 0 412 016 712 Governor Governor design. : RQV300...1150PA850 : 0 421 813 598 Governer no. Customer-spec. information Customer : KHD Engine : BF6L513R 1st version kW : 177.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Openina** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter × Wall thickness x Length mm : 6.00x1,50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____ BEGINNING OF DELIVERY Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 13.40...13.50 Del.quantity cm3/: 15.1...15.3 100 s: (14.8...15.6) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 300.0Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) cm3 : 0.4Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.30...1.40 2nd speed rpm : 390 travel mm : 2.40...2.70 3rd speed rpm : 460 : 2.80...3.20 travel mm 4th speed rpm : 1190 travel mm : 8.40...8.50 5th speed rpm : 1290 travel mm : 9.40...9.70 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1190 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 900 Del.quantity : 151.0...153.0 1000 : (148.0...156.0) Spread cm3 : 4.00 1000 : (7.50)

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 12.40

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm: 1310...1340 4th rack travel in: 1400 Speed

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 83...91

Testing:

Speed rpm : 100 Minimum rack trave: 9.40

Speed rpm : 300 Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

rpm : 320...480 Speed

TORQUE CONTROL

Dimension a mm : 0.10

Rack travel in m: 13.40...13.50

rpm : 600 2nd speed

Rack travel in m: 13.50...13.70

3rd speed rpm : 950

Rack travel in m: 13.45...13.60

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 450 Speed hPa : 900 Pressure

Rack travel mm : 13.60...13.70

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 420

Rack travel in m: 13.20...13.30

3rd pressure hPa : 360

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed

1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600 Del.quantity cm3/ : 156.0...160.0 1000 s: (154.0...162.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 W Edition : 21.01.93 Replaces : 11.87 Test oil : ISO-4113

Combination no. : 0 402 046 792

Injection pump

Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712

Governor

Governor design: : RQV400...1100PA882

Governer no. : 0 421 813 681

Customer-spec. information Customer : KHD

Engine : BF6L513R

1st version kW : 176.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm: 12.90...13.00

Del.quantity cm3/: 14.1...14.3

100 s: (13.8...14.6)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.02nd speed Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 0.80...1.20

rpm : 600 2nd speed travel mm : 2.80...3.60

rpm : 900 3rd speed : 5.60...6.20

travel mm rpm : 1140 4th speed

: 8.20...8.40 travel mm

rpm : 1230 5th speed

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity

: 141.0...143.0

1000 : (138.0...146.0)

: 4.00 Spread cm3

1000 : (7.50)

1st version

Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 86...94

Testing:

Speed rpm : 300 Minimum rack trave: 9.20

rpm : 400 Rack travel in mm : 7.50...7.70

CONSTANT REGULATION

Speed rpm : 400...650

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.90...13.00

rpm : 650 2nd speed

Rack travel in m: 13.20...13.30

3rd speed rpm : 750

Rack travel in m: 13.10...13.20

4th speed rpm : 950

Rack travel in m: 12.90...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 450 ripin Pressure hPa : 700

Rack travel mm : 13.30...13.40

Measurement

1/min: 450 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 400

Rack travel in m: 13.10...13.20

3rd pressure hPa : 300

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed

1/min: 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 650

Del.quantity cm3/: 148.0...152.0 1000 s: (145.0...155.0)

Aneroid pressure h: -

rpm : 450

Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 10C Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: KHD 9,6 v 1 Test sheet : 11.01.93 Edition Replaces : 07.88 Test oil : ISO-4113

Combination no. : 0 402 046 794

Injection pump

Pump designation : PES6P110A72ORS3104 : 0 412 016 712

EP type number Governor

Governor design. : RQV300...1075PA862-1

: 0 421 813 684 Governer no.

Customer-spec. information Customer : KHD

Engine : BF6L513 R/C

1st version kW : 150.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 13.1...13.3

100 s: (12.8...13.6)

cm3 : 0.4 Spread

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 7.6...7.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4) cm3 : 0.4

Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 450

: 2.60...3.20 travel mm

rpm : 700 3rd speed

travel mm : 4.80...5.40

4th speed : 1110 rpm

: 7.90...8.10 travel mm

: 1230 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

: 131.0...133.0 Del.quantity 1000 : (128.0...136.0)

cm3 : 4.00 Spread

1000 : (7.50)

NO1

RATED SPEED 1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 11.40 rpm : 1110...1120 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm : 100 Minimum rack trave: 9.10 : 300 rpm Rack travel in mm : 7.60...7.80 CONSTANT REGULATION : 3**0**0...480 Speed man FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 133.0...139.0 1000 s: (130.0...142.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 rpm : 1110...1120 Speed STARTING FUEL DELIVERY

NO2

Speed

Remarks:

FOM

Del.quantity cm3/: 170.0...200.0

: 100

1000 s: (166.0...204.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-4-2-6-3-5 Test sheet : PER 12,2 c Edition : 27.11.92 Replaces : 03.89 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 797 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS3212 EP type number : C 412 026 731 BASIC SETTING Governor Governor design. : RQV250...1050PA794-2 1st speed rpm: 900 : 0 421 813 698 Governer no. Rack travel in mm : 14.60...14.70 Customer-spec. information Customer : PERKINS Del.quantity cm3/: 23.9...24.1 Engine : EAGLE TX 100 s: (23.6...24.4) 1st version kW : 240.0 cm3 : 0.6Spread Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Test oil Rack travel in mm: 5.9...6.1 inlet temp. °C : 38...42 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...2.0) Overflow valve Spread cm3 : 0.3: 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Openina travel mm : 0.90...1.30 : 207...210 pressure, bar 2nd speed rpm : 350 : 2.90...3.50 travel mm Orifice plate 3rd speed rpm : 700 diameter mm : 0,8 : 4.00...4.60 travel mm 4th speed : 1000 rpm travel mm : 7.40...7.60 Test Lines : 1 680 750 067 5th speed : 1100 rpm travel mm : 8.80...9.20 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1070 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY

1st version

rom : 900

Aneroid pressure h: 1200

Speed

Test pressure, bar: 25...27

239.0...241.0 1000 : (236.0...244.0) Del.quantity cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 13.60 rpm : 980...990 Speed 2nd rack travel in: 4.00

rpm : 1085...1115 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 81...89

Testing:

rpm : 100 Speed Minimum rack trave: 7.50 Speed rpm : 250

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 250...550

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed hPa : 1200 Pressure

Rack travel mm : 14.60...14.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.30

2nd pressure hPa : 900

Rack travel in m: 14.10...14.20

3rd pressure hPa : 625

Rack travel in m: 12.90...13.10

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

NO4

Aneroid pressure h: 1200

Speed rpm : 600 Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0)

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 179.0...181.0

1000 s: (176.0...184.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

rpm : 980...990 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0

1000 s: (126.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u : 11.01.93 Edition Replaces : 08.89 Test oil : ISO-4113

Combination no. : 0 402 046 799

Injection pump

Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712

Governor

Governor design. : RQV300...1075PA850-1

Governer no. : 0 421 813 708

Customer-spec. information Customer : KHD

Engine : BF6L413FR/513R

1st version kW : 193.0 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.6...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 400

: 2.70...3.30 travel mm

3rd speed rpm : 600

: 4.20...4.80 travel mm

4th speed : 1120 rpm

: 8.40...8.60 travel mm

5th speed : 1245 mom

: 9.60...10.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 900

Del.quantity : 145.0...147.0

1000 : (142.0...150.0)

Spread : 4.00 cm3

1000 : (7.50)

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.40 rpm : 1115...1125 Speed

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 85...93

Testing:

Speed rpm : 100 Minimum rack trave: 9.60 Speed rpm : 300

Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

rpm : 300...490 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.60...13.80

3rd speed rpm : 950

Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

: 450 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min: 450

1st pressure hPa : -

Rack travel in m: 12.60...12.80

2nd pressure hPa : 420

Rack travel in m: 13.20...13.30

START CUT-OUT

1/min : 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 600

Del.quantity cm3/: 149.0...154.0

1000 s: (146.5...156.5)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Adjust shutoff device to 0.5...1.5 mm.

On activation of the starting solenoid, the start position must be reached.

N06

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 2 Edition : 11.01.93 Replaces : 08.88

Replaces : U8.88 Test oil : ISO-4113

Combination no. : 0 402 046 801

Injection pump

Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712

Governor

Governor design. : RQV300...1150PA850-2

Governer no. : 0 421 813 718

Customer spec. information Customer : KHD

Engine : BF6L513RC

1st version kW : 231.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening:

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3:0.4

100 s: (0.7)

2nd speed rum : 300.0 Rack travel in mm : 7.7...7.9

Del.quantity cm3/: 1.6...2.1

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

travel mm : 1.20...1.40

2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 650

travel mm : 4.20...4.80

4th speed rpm: 1195

travel mm : 8.40...8.60

5th speed rpm : 1320

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 900

Del.quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm3 : 4.00

1000 : (7.50)

N07

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 13.40

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 82...90

Testina:

Speed : 100 rpm Minimum rack trave: 9.30

Speed rpm : 300 Rack travel in mm : 7.70...7.90

CONSTANT REGULATION

rpm : 300...490 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 14.40...14.50

2nd speed npm : 700

Rack travel in m: 14.60...14.80

3rd speed rpm : 950

Rack travel in m: 14.50...14.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 450 hPa : 900 Pressure

Rack travel mm : 14.60...14.80

Measurement

1/min : 450Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50 2nd pressure hPa : 530 Rack travel in m: 14.00...14.10

3rd pressure hPa : 390

Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700

Del.quantity cm3/: 176.0...180.0 1000 s: (173.0...183.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1190...1200 Sreed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 9,6 u 3 Edition : 11.01.93 Replaces : 04.89 Test oil : ISO-4113 Combination no. : 0 402 046 805 Injection pump Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712 Governor Governor design. : RGV300...1075PA850-3 : 0 421 813 743 Soverner no. Customer-spec. information Customer : KHD Engine : BF6L413FRC/513RC 1st version kW : 198.0 Rated speed : 2150 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina . pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1075 Rack travel in mm: 14.00...14.10 Del.quantity cm3/: 16.4...16.6 100 s: (16.1...16.9) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 300.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.00...1.40 travel mm 2nd speed rpm : 450 travel mm : 2.60...3.20 rpm : 650 3rd speed : 4.70...5.30 travel mm 4th speed : 1110 man : 8.20...8.40 travel mm 5th speed : 1250 rpm travel mm : 9.50...9.90 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1140 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1075 Aneroid pressure h: 900 Del.quantity : 164.0...166.0 1000 : (161.0...169.0) Spread : 4.00 cm31000 : (7.50)

: 0-60-120-180-240-300

Phasing

BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

: 6-2-4-1-5-3

Prestroke mm

Firing order

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.00

rpm : 1105...1115 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 84...92

Testing:

Speed : 100 rom Minimum rack trave: 9.40 Speed rpm: 300

Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 300...520

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

rpm : 1075 1st speed

Rack travel in m: 14.00...14.10

rpm : 700 2nd speed

Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed Pressure hPa : 900

Rack travel mm : 14.20...14.30

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed

7/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700

Del.quantity cm3/: 170.0...174.0 1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0)

EREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1105...1115

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : KHD 9,6 u 4 Test sheet Edition : 11.01.93 Replaces : 10.89 Test oil : ISO-4113 Combination no. : 0 402 046 806 Injection pump Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712 Governor Governor design. : RQV300...1150PA850-4 Governer no. : 0 421 813 745 Customer-spec, information Customer : KHD Engine : BF6L513RC 1st version kW : 210.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

Time to cyl. no. :	6
BASIC SETTING	
1st speed rpm:	1150
Rack travel in mm :	14.0014.10
Del.quantity cm3/:	16.516.7
100 s:	(16.217.0)
Spread cm3:	0.4
100 s:	(0.7)
Spread cm3 : 100 s:	7.47.6 1.21.6 (0.91.9) 0.4 (0.7)
(B) Setting of injection pump with governor	
GUIDE SLEEVE TRAVEL 1st speed rpm : travel mm : 2nd speed rpm : travel mm : 3rd speed rpm : travel mm : 4th speed rpm : travel mm : 5th speed rpm : travel mm :	300 1.001.40 450 2.603.20 650 3.303.90 1195 8.308.50 1330 9.7010.10
GUIDE SLEEVE POSITI Control-lever posit Degree: Speed rpm : Rack travel in mm :	ion -1 1190
FULL LOAD DELIV. AT FULL LOAD STOP	
1st version Speed rpm : Aneroid pressure h: Del.quantity : 1000 : Spread cm3 : 1000 :	165.0167.0 (162.0170.0) 4.00

: 0-60-120-180-240-300

Phasina

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 13.00

rpm : 1190...1200 Speed

2nd rack travel in: 4 00

Speed rpm : 1315...1345 4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 84...92

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00

Speed rpm : 300 Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rom : 300...550

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 14.00...14.10 2nd speed rpm : 750 Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed r'pm Pressure hPa : 900

Rack travel mm : 14.20...14.30

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.10...12.30

2nd pressure hPa : 510 Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.60...12.90

START CUT-OUT

1/min : 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed : 750 rpm

Del.quantity cm3/: 170.0...174.0 1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mni : 4.30...4.40 : (4.25...4.45) Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order Test sheet : MB 11,7 a17 Edition : 26.06.92 Replaces : 04.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 807 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P110A820LS3131 EP type number : 0 412 016 715 BASIC SETTING Governor Governor design. : RQV300...1100PA916 1st speed rpm: 1100 : 0 421 813 748 Governer no. Rack travel in mm : 11.40...11.50 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 13.7...13.9 Engine : 0M447 100 s: (13.4...14.1) 1st version kW : 168.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Test nozzle holder travel mm : 1.60...1.90 : 0 681 343 009 assembly 2nd speed rpm : 425 travel mm : 3.30...3*.7*0 **Opening** 3rd speed rpm : 920 pressure, bar : 172...175 : 5.70...6.10 travel mm 4th speed : 1155 rpm : 7.90,..8.40 travel mm Test lines : 1 680 750 015 5th speed : 1255 man : 9.70...10.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1160 Speed Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY 1st version

: 137.0...139.0 Del.quantity 1000 : (134.5...141.5) : 4.00 Spread cm3 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testina: 1st rack travel in: 10.40 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 COM Minimum rack trave: 9.20 Speed rpm : 300 Rack travel in mm : 7.60...7.80 CONSTANT REGULATION Speed rpm : 300...500 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed : 600 rpm Del.quantity cm3/: 113.0...116.0 1000 s: (110.0...119.0) cm3 : 5.00 Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1140...1150

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

N14

Speed

STARTING FUEL DELIVERY

rom

: 100

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 27.11.92 Edition Replaces : 09.92 Test oil : ISO-4113 Combination no. : 0 402 046 807A Injection pump Pump designation : PES6P110A820LS3131 EP type number : 0 412 016 715 Governor Governor design. : RQV300...1100PA916 Governer no. : 0 421 813 748 Customer-spec, information Customer : MERCEDES-BENZ Engine : 0f4447C 1st version kW : 177.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.30...4.40 : (4.25...4.45) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.2)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0Rack travel in mm: 7.0...7.6 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.4100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.10...1.40 travel mm 2nd speed rpm : 450 : 3.40...3.80 travel mm 3rd speed rpm : 1150

: 7.90...8.30 travel mm : 1225 4th speed rpm

travel mm : 9.10...9.70

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

: 138.0...140.0 Del.quantity 1000 : (135.5...142.5)

cm3 Spread : 4.00 1000 : (8.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 rpm Minimum rack trave: 8.80 Speed : 300 r pm Rack travel in mm : 7.20...7.40 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 116.0...119.0 1000 s: (113.0...122.0) cm3 : 5.00Spread 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

N16

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 6,2 f : 21.01.93 Edition : 12.91 Replaces Test oil : ISO-4113 : 0 402 046 811 Combination no. Injection pump Pump designation : PES6P110A320RS3233 EP type number : 0 412 016 728 Governor Governor design. : RQV275...1175PA833-4 : 0 421 813 762 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 060226D 1st version kW : 166.0 Rated speed : 2350 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

> : 4.20...4.30 : (4.15...4.35)

> > Speed

Rack travel in mm : 18.00...21.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 3.90...4.10 & maximum rack tra: 13.0...14.0 Difference * CS : 4.50...6.00 BASIC SETTING 1st speed rpm: 1175 Rack travel in mm : 13.50...13.60 Del.quantity cm3/: 11.7...11.9 100 s: (11.4...12.1) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 275.0Rack travel in mm : 5.2...5.6 Del.quantity cm3/: 3.2...3.8 100 s: (2.9...4.0) Spread cm3 : 0.4 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.40...0.60 rpm : 450 2nd speed travel mm : 2.90...3.50 3rd speed rpm : 800 : 4.60...5.00 travel mm rpm : 1175 4th speed travel mm : 6.90...7.10 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1430 Rack travel in mm : 12.20...14.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 1175

Prestroke mm

Aneroid pressure h: 1000

Del.quantity : 117.0...119.0

1000 : (114.5...121.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 12.50

Speed rpm : 1240...1250

2nd rack travel in: 4.00

rpm : 1405...1435 Speed

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

Speed rpm Minimum rack trave: 7.70 rpm : 275

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 1000 Pressure

Rack travel mm : 13.50...13.60

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.40...10.00

2nd pressure hPa : 200

Rack travel in m: 10.60...10.70

3rd pressure hPa : 440

Rack travel in m: 12.40...12.80

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 700

Del.quantity cm3/: 111.5...116.5

1000 s: (108.5...119.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 51.0...53.0

1000 s: (48.5...55.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 82.0...102.0

1000 s: (78.0...106.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 32.0...38.0

1000 c: (29.5...40.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Start-of-delivery blocking at start of

delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : KHD 9,6 y : 21.01.93 Edition : 07.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 817

Injection pump

Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712

Governor

Governor design. : RQV30C...1150PA850-5

: 0 421 813 871 Governer no.

Customer-spec. information Customer : KHD

Engine : BF6L513R

1st version kW : 177.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.4 Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 2.10...2.50

2nd speed rpm : 450

3.40...4.00 travel mm

700 3rd speed rom

: 5.10...5.70 travel mm

4th speed : 1190 rpm

: 8.90...9.10 travel mm

: 1300 5th speed rpm

: 10.00...10.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 900

Del.quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm3: 4.00

1000 : (7.50)

1st version Control lever

position degrees: 119...127

Testina:

1st rack travel in: 12.40

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1310...1340 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 89...97

Testing:

Speed rpm : 100 Minimum rack trave: 9.40

Speed rpm : 300 Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 320...520

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 450 Pressure hPa : 900

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min: 450

1st pressure hPa : -

Rack travel in m: 12.40...12.60 2nd pressure hPa : 510 Rack travel in m: 13.20...13.30

3rd pressure hPa : 410

Rack travel in m: 12.70...12.90

START CUT-OUT

1/min : 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 600

Del.quantity cm3/: 153.0...157.0

1000 s: (151.0...159.0)

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Combine-harvester

N20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet Edition

: RVI

: 25.09.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 823

Injection pump

Pump designation : PES6P120A320RS3279

EP type number

: 0 412 026 748

Governor

Governor design. : RQ275/1050PA999

Governer no.

: 0 421 801 585

Customer-spec. information Customer

: RVI

Engine

: MIDR 062045 D/3

1st version kW

: 222.0

Rated speed

: 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 105

Openina

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed

Spread

2nd speed

Spread

rpm : 650

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

cm3 : 0.5

100 s: (0.9)

rpm : 275.0 Rack travel in mm: 5.9...6.3

Del.quantity cm3/: 1.9...2.3

100 s: (1.6...2.6)

cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 650

Aneroid pressure h: 1000

Del.quantity : (00.0....) 1000 : (185.0...193.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed

rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.80

rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

: 275 Speed rpm Rack travel in mm: 6.1

Testing:

Speed : 175 rpm Minimum rack trave: 7.60 rom : 275

Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 650

Rack travel in m: 11.80...11.90

2nd speed **rpm** : 1050

Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1000 Pressure

Rack travel mm : 11.80...11.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.50

2nd pressure hPa : 280 Rack travel in m: 9.40...9.50

3rd pressure hPa : 560

Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1050 Del.quantity cm3/ : 173.0...179.0

1000 s: (170.0...182.0)

Ameroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 85.0...87.0

1000 s: (82.0...90.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 145.0...175.0 1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275 Rack travel in mm : 5.90...6.30 Deliquentity cm3/: 19.0...23.0

1000 s: (16.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of

delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Note remarks Ratk travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : RVI Edition : 25.09.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 824 Tolerance + - ° : 0.50 (0.75)Injection pump BASIC SETTING Pump designation : PES6P120A320RS3279-1 EP type number : 0 412 026 758 1st speed rpm: 700 Governor Governor design, : RQ275/1050PA999-5 Rack travel in mm: 11.00...11.10 : 0 421 801 663 Governer no. Del.quantity cm3/: 15.4...15.6 Customer-spec. information Customer 100 s: (15.1...15.9) : RVI : MIHR 062045 A/3 Engine Spread cm3 : 0.51st version kW : 188.0 100 s: (0.9) Rated speed : 2100 rpm : 275.02nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 1.7...2.1 Test oil 100 s: (1.4...2.4) : 38...42 cm3 : 0.8 inlet temp. °C Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -2 rpm : 600 Speed Test rozzle holder Rack travel in mm : 19.20...20.80 assembly : 1 688 901 105 FULL LOAD DELIV. AT FULL LOAD STOP Openina pressure, bar : 207...210 1st version Speed rpm : 700 Orifice plate Aneroid pressure h: 1000 diameter mm Del.quantity : 154.0...156.0 : 0,8 1000 : (151.0...159.0) : 5.00 Spread cm3 : 1 680 750 089 Test Lines 1000 : (9.00)Outside diameter RATED SPEED x Wall thickness x Length mm : 8.00x2.50x600 1st version (A) Injection pump setting values Setting point: Insp. values in parentheses : 600 rom Set equal delivery quant. Rack travel in mm : 20.0 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 10.00 Test pressure, bar: 25...27 rpm : 1130...1145 Speed

2nd rack travel in: 4.00

rpm : 1235...1265 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

: 275 rpm Rack travel in mm : 6.0

Testing:

rpm Speed : 175 Minimum rack trave: 7.50

Speed rpm : 275 Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.00...11.10

2nd speed rpm : 1050

Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm Pressure hPa : 1000

: 11.00...11.10 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 160

Rack travel in m: 10.20...10.30

3rd pressure hPa : 220

Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1050 Del.quantity cm3/ : 148.0...154.0

1000 s: (145.0...157.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 111.0...113.0 1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1130...1145 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 145.0...165.0

1000 s: (141.0...169.0)

LOW IDLE

Speed : 275 rpm

Rack travel in mm : 5.80...6.20 Del.quantity cm3/ : 17.0...21.0 1000 s: (14.0...24.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of

delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 9,6 y 1 Edition : 11.01.93 Replaces : 11.91 Test oil : ISO-4113 Combination no. : 0 402 046 832 Injection pump Pump designation : PES6P110A720RS3104 EP type number : 0 412 016 712 Governor Governor design. : RQV350...1100PA850-6 Governer no. : 0 421 813 975 Customer-spec. information Customer : KHD Engine : BF6L513RC TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses

Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 16.3...16.5 100 s: (16.0...16.8) Spread cm3 : 0.4100 s: (0.7) 2nd speed rpm : 350.0 Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 1.6...2.1 100 s: (1.4...2.4) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 350 travel mm : 1.10...1.30 2nd speed rpm : 410 travel mm : 2.60...3.20 3rd speed : 590 rpm : 3.90...4.50 travel mm : 1160 4th speed rom travel mm : 8.60...8.80 5th speed rpm : 1215 travel mm : 9.80...10.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1140 Rack travel in mm : 15.20...17.80 1st version Speed Del.quantity Spread cm3

Phasing

: 0-60-120-180-240-300

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.90

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1310

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 84...92

Testing:

Speed rpm : 100 Minimum rack trave: 9.50 : 350 rom

Rack travel in mm : 7.80...8.00

CONSTANT REGULATION

Speed rpm : 400...470

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 13.90...14.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 450

Rack travel in m: 13.40...13.50

3rd pressure hPa : 370

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 162.0...166.0 1000 s: (159.0...169.0)

cm3 : 6.00

Spread 1000 s: (9.00)

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0)

cm3 : 4.00Spread 1000 s: (7.50)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

N26

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Note remarks Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Test sheet : RVI : 22.01.93 Edition : 07.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Compination no. : 0 402 046 836 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS3303 : 0 412 026 755 EP type number 1st speed rpm: 1050 Governor Governor design. : RQV275...1050PA1038K Rack travel in mm : 11.00...11.10 : 0 421 815 313 Governer no. Del.quantity cm3/: 15.5...15.7 Customer-spec. information Customer : RVI 100 s: (15.2...16.0) Engine : MIDR 062045 J/3 cm3 : 0.5Spread 1st version kW : 169.0 100 s: (0.9) Rated speed : 2100 rpm : 275.02nd speed TEST BENCH REQUIREMENTS Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 2.2...2.6 Test oil 100 s: (1.9...2.9) inlet temp. °C : 38...42 cm3 : 0.8 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1140 : 1 688 901 105 assembly travel mm : 8.90...9.10 2nd speed rpm : 275 Openina travel mm : 1.20...1.40 pressure, bar : 207...210 3rd speed rpm : 380 travel mm : 2.90...3.50 Orifice plate rpm : 740 4th speed diameter mm : 0,8 travel mm : 6.00...6.40 rpm : 1480 5th speed travel mm : 13.00...14.00 Test lines : 1 680 750 039 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 8.00x2.50x600 rpm : 1330Speed Rack travel in mm : 7.90...11.90 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version Speed rpm : 1050 BEGINNING OF DELIVERY Del.quantity : 155.0...157.0 Test pressure, bar: 25...27 1000 : (152.0...160.0)

Spread cm3: 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 283...291

Testing:

1st rack travel in: 10.00

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 238...246

Testing:

Speed rpm : 200 Minimum rack trave: 6.30 rpm : 275

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 280...380 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.00...11.10

2nd speed rpm : 700

Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed mgn : 700

Del.quantity cm3/: 133.0...139.0

1000 s: (130.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

N28

Speed rpm : 100

Del.quantity cm3/: 155.0...185.0

1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : -5.30...-5.70 Del.quantity cm3/ : 22.0...26.0

1000 s: (19.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of

•

delivery of cylinder no. 1.